THE

# UNIVERSAL GARDENER And BOTANIST;

OR, A

# GENERAL DICTIONARY

OF

# GARDENING and BOTANY.

Exhibiting in Botanical Arrangement, according to the Linnæan Syſtem,

**Every TREE, SHRUB, and Herbaceous PLANT, that merit Culture,**
either for USE, ORNAMENT, or CURIOSITY, in every Department of GARDENING.

Compriſing accurate Directions, according to real Practice, for the Management of the

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| KITCHEN-GARDEN, | NURSERY, | HOT-BEDS, |
| FRUIT-GARDEN, | PLANTATIONS, | FORCING-FRAMES, |
| PLEASURE-GROUND, | GREEN-HOUSE, | HOT-WALLS, and |
| FLOWER-GARDEN, | HOT-HOUSE, or STOVE, | FORCING in general. |

Deſcribing the proper Situations, Expoſures, Soils, Manures, and every Material and Utenſil requiſite in the different Garden Departments;

Together with

## PRACTICAL DIRECTIONS

FOR

**Performing the various Mechanical Operations of GARDENING in general.**

By THOMAS MAWE,
Gardener to his Grace the Duke of Leeds.

And JOHN ABERCROMBIE,
Authors of Every Man his Own Gardener, &c.

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TO THE

GARDENERS, BOTANISTS, AND FLORISTS,

OF

GREAT BRITAIN AND IRELAND,

THE FOLLOWING WORK,

THE RESULT OF MANY YEARS LABOUR AND EXPERIENCE,

IN VARIOUS PARTS OF THESE KINGDOMS,

IS HUMBLY INSCRIBED,

BY THEIR MUCH OBLIGED

AND OBEDIENT SERVANTS,

THE AUTHORS.

# ADVERTISEMENT.

THE kind reception which the authors of this Dictionary have experienced in a book of theirs publiſhed ſome years ago, entitled *Every Man his own Gardener*, of which many thouſands have been ſold, encourages them to hope for the public favour and approbation in a work of a more extenſive nature, but, at the ſame time perfectly conſiſtent with their former labours.

Gardening and Botany are ſo nearly allied, that every profeſſor of Horticulture ought to be a Botaniſt, or at leaſt know the rudiments or principal out-lines of *Botanic Philoſophy*, in conjunction with that of practical Gardening; for, as his province is the propagation and culture of plants, it is neceſſary for him alſo to know the claſs, order, and genus to which every plant under his care belongs, agreeable to their botanic characters and ſyſtematical arrangement.

It will be readily allowed, that ſeveral books of Gardening, from which general inſtruction was expected, have proved deficient, not only in the moſt eſſential parts of Practical Gardening, but alſo in the Botanic Syſtem; from hence it naturally follows, that many practitioners ſtill remain ignorant of the principal branches and operations of Gardening; and the practice of Botany.—On due conſideration of the defective ſtate of the different voluminous books of Gardening, heretofore publiſhed, reſpecting their irregular and unintelligible



arrangements,

arrangements, and the impracticable and prolix directions, for performing the neceſſary operations; we humbly conceived, that a ſyſtem of Univerſal *Gardening and Botany* united, would be highly acceptable, not only to practitioners, but to all others who delight in thoſe laudable purſuits.

We have, therefore, from the reſult of many years extenſive practice and experience in different parts of theſe kingdoms, diligently compoſed a comprehenſive Syſtem of *Univerſal Gardening and Botany*, compriſed in a moderate volume, on an original plan; comprehending, in botanical arrangement, according to the celebrated Linnæan ſyſtem, all the known trees, ſhrubs, and herbaceous plants, natives and exotics, that are cultivated, or merit general culture either for uſe, ornament, curioſity, or obſervation; with the names of the claſſes, orders, genera, and of the different ſpecies of plants in each genus or family; together with the deſcription of their general habit and ſtructure, and all the proper botanic terms of art uſed in diſcriminating the various parts of plants.

We have alſo explained the different temperatures of the various trees and plants, hardy and tender, whether for the full ground or the green-houſe, ſtove or hot-bed, &c. and deſcribed the ſeveral uſes of the various plants in gardening and for œconomical purpoſes; their proper arrangement in every department, both in the various hardy plantations, as the Nurſery, Pleaſure-ground, Flower-garden, Kitchen-garden, Fruit-garden, Woods, and Foreſts; and in the Green-houſe, Stove, Hot-beds, Frames, &c. With the practical method of raiſing or propagating every different tree and plant; and their general method of culture, in every ſtage of growth, in the ſeveral diſtricts of Gardening.

The reader will find full directions, from experience, for managing the Nurſery, Pleaſure-ground, Shrubbery, Flower-garden, Kitchen-garden, Fruit-garden, Timber-plantations, Green-houſe, Stove, Hot-beds, Forcing-frames, Common-frames, &c. and alſo directions for performing the mechancial operations of the different methods of ſowing and planting all ſorts of ſeeds, roots, and

plants,

plants, in every department of Gardening and Planting. Alſo the operations of propagating the numerous ſpecies of trees, ſhrubs, and herbaceous plants, either by ſeed, ſuckers, ſlips, off-ſets, parting roots, layers, cuttings, grafting, budding, inarching, &c. Together with the beſt method of performing all other mechanical operations of Gardening; and a deſcription of the proper ſoils, manures, ſituations, and expoſures for the various garden diſricts, and reſpective plants.

Some apology may be neceſſary for the ſtyle; but when it is conſidered, that perſpicuity ought to be preferred to elegance, the good-natured reader will pardon little miſtakes in language, if the meaning is clear and obvious.

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THE

# UNIVERSAL GARDENER

AND

# BOTANIST.



ACANTHUS, formerly named *Branca Urſina*, i. e. Bears-breech.

This genus retains five diſtinct ſpecies, four of which are hardy herbaceous perennials of the flowery tribe, that obtain three or four feet ſtature, adorned at top with numerous flowers in erect ſpikes, and merit eſteem as plants of ornament for the embelliſhment of the pleaſure ground. The other is an evergreen ſhrub, of the temperature of ſtove exotics.

The *Acanthus* belongs to the claſs and order *Didynamia Angioſpermia*, and its characters are,

The CALIX, three pair of leaves forming a kind of triple cup. The COROLLA, monopetalous and ringent, opening above with a mouth, hath a broad under lip, but the upper one is wanting. The STAMINA, are two ſhort and two long filaments, having compreſſed antheræ. The PISTILLUM, a turbinated germen ſupporting a filiforme ſtyle, terminated by two acute ſtigma. PERICARPIUM, a roundiſh capſule of two cells, pregnant with ſmooth fleſhy ſeeds.

The ſpecies are,

[1] ACANTHUS *Mollis.*

*Smooth Acanthus.*] Acanthus with deeply ſinuated and indented, ſmooth, unarmed leaves.

[2] ACANTHUS *Spinoſus.*

*Thorny Acanthus.*] Acanthus with deeply jagged many-pointed leaves, having each ſegment terminated by a thorny point.

[3] ACANTHUS *Niger.*

*Shining leaved Acanthus.*] Acanthus with ſinuated, unarmed, ſmooth, ſhining leaves.

[4] ACANTHUS *Dioſcoridis.*

*Acanthus of Dioſcorides.*] Acanthus with ſpear-ſhaped entire leaves, having ſpinous borders.

[5] ACANTHUS *Ilicifolio.*

*Holly leaved ſhrubby Acanthus.*] Acanthus with a ſhrubby ſtalk, and waved, dentated, ſpinous edged leaves.

The firſt four ſpecies are hardy, herbaceous, fibrous-rooted plants, that produce ſtalks annually, three or four feet high, perennial in root, but annual in leaf and ſtalk, they riſing in ſpring, and periſh in autumn.

The roots are compoſed of thick fleſhy fibres, which are conſiderably ſpreading, and penetrate deep in the earth.

The leaves and flower-ſtalks riſe immediately from the root. The leaves ſpread near the ground; they are large and long, generally from about ten or twelve to eighteen inches in length, and half as much in breadth. Thoſe of the firſt, ſecond, and third ſorts are variouſly ſinuated, divided, and indented, and ſpreading in circular cluſters, and form a ſingularly elegant appearance. The flower-

ſtalk riſes between the leaves, and attains three or four feet ſtature, erect, round, thick, fleſhy, and decorated upward with numerous flowers. The flowers are univerſally hermaphrodite, and formed each of one tubular petal, the colour chiefly white, and arrange themſelves in a thick ſpike along the upper part of the ſtalk, each ſeparate flower occupying a diſtinct cup. They appear in July and Auguſt, continue a month or ſix weeks, and are ſucceeded by plenty of ripe ſeed in autumn.

The *Acanthus Mollis* was greatly celebrated in ancient times for the elegance of its leaf, which attaining a conſiderable length and breadth, and having its edges curiouſly ſcalloped, undulated, and indented in a ſingularly beautiful manner, is the chief ornament of the plant.

The *Acanthus Spinoſus* is alſo a noble plant, and demands our attention for the ſingularity of its large many pointed thorny leaves, which form a pleaſing variety.

The above two ſpecies are the moſt commonly known and cultivated in the Engliſh gardens.

Theſe plants are natives of Italy, Spain, and Portugal, but grow freely here in the full ground, and are of eaſy culture.

The *Acanthus Ilicifolio* is a low evergreen ſhrub, a native of South America, and requires the aid of a ſtove to retain it in this country.

*Uſe in Gardens, Propagation, &c.*

With reſpect to the merit of theſe plants in gardens; the herbaceous ſpecies may with propriety be employed as furniture for the decoration of common large borders, and other ſimilar compartments of the pleaſure ground, and they may be introduced in the ſhrubbery clumps, toward the front, between ſhrubs of moderate growth. Their flowers, though not elegant, are conſpicuous; which, together with the pleaſing ſingularity of the leaves, the plants will effect the purpoſe both of variety and ornament.

They proſper in any common ſoil, and do not require any particular expoſure.

The four herbaceous ſpecies may be propagated both by ſeed and by parting the roots.

The ſeed grows freely in the common ground, and ſhould be ſown in March or April, either in ſhallow drills, or on the ſurface, and raked in, or covered with earth half an inch deep. The plants will appear in ſix weeks, thin them to ſix inches, and in autumn or ſpring following tranſplant them into the borders, where they will flower the ſucceeding ſummer.

The propagation by parting the roots may be effected in autumn or ſpring: the ſmalleſt off-ſet will readily grow; it however is not eligible to part them too ſmall. See PARTING-ROOTS. Plant them at once where they are to continue.

Their general culture is only to allow ſupport, when neceſſary, to the flower ſtalks, and when theſe decay in autumn, to cut them down.

Theſe plants are retained in moſt of the nurſeries for ſale, particularly the Smooth and Thorny Acanthus.

ACAULES *Plants*, i. e. without a caulis, or ſtem. A term uſed by botaniſts expreſſive of plants that have no viſible ſtalk, but grow cloſe to the ground.

ACER, The Maple Tree.

This genus furniſhes a large collection of hardy deciduous trees, being ſuch as caſt their leaves in autumn, and remain diveſted of them during the winter; they claim attention, ſome as timber trees, others for uſeful and ornamental purpoſes in gardening.

The *Acer* belongs to the claſs and order *Polygamia Monoecia*, and its characters are,

The CALIX, monophyllous, five-parted, coloured, and permanent. COROLLA, five oval expanded petals. STAMINA, eight filaments with ſimple antheræ. PISTILLUM, a compreſſed germen and ſlender ſtyle, having two acuminated ſtigma. PERICARPIUM, two roundiſh, united, winged capſules, each containing one ſeed.

The ſpecies and reſpective varieties are,

[1] ACER *Campeſtre.*

*Common or Smaller Maple.*] Maple with lobated and obtuſely emarginated leaves.

[2] ACER *Pſeudo-Platanus.*

*Falſe Platanus, Greater Maple, or Sycamore-Tree.*] Maple with leaves divided into five lobes, having the edges unequally ferrated, and flowers produced in a racemus.

*Variety.*] Sycamore-tree with variegated leaves.

[3] ACER *Rubrum.*

*Scarlet-flowering Maple.*] Maple with leaves divided into five ſlightly indented lobes, white on the under ſide, and with aggregate flowers.

*Variety.*] Wager's flowering maple, with the largeſt aggregate of flowers.

[4] ACER *Saccharinum.*

*Sugar*

*Sugar Maple.*] Maple with five-parted palmated leaves, having the edges ſharply indented.

[5]ACER *Platanoides.*

*Platanus-leaved Norway Maple.*] Maple with ſmooth ſhining leaves, divided into five ſharp-pointed and acutely indented lobes, and flowers produced in a corymbus.

*Variety.*] Norway maple with variegated leaves.

[6]ACER *Penſylvanicum.*

*Penſylvanian Mountain Maple.*] Maple with leaves having three acuminated and ſharply ſerrated lobes, and flowers produced in a racemus.

[7]ACER *Negundo.*

*Aſh-leaved Virginia Maple.*] Maple with leaves compoſed of ſeveral diſtinct lobes, and with flowers produced in a racemus.

[8]ACER *Monſpeſſulanum.*

*Montpelier or French Maple.*] Maple with ſhining leaves, having three lobes with entire edges.

[9]ACER *Opalus.*

*The Opalus or Italian Maple.*] Maple with large roundiſh lobated, ſlightly cut leaves, and flowers produced in a racemus.

[10]ACER *Creticum.*

*Cretan or Levant Maple.*] Maple with leaves divided into three lobes, having the edges entire, and the under ſide a little downy.

[11]ACER *Tartaricum.*

*Tartarian Maple.*] Maple with oblong heart-ſhaped, ſlightly lobated, and unequally ſerrated leaves.

All the above ſpecies and reſpective varieties are of the tree kind, deciduous, and of hardy temperature, that proſper in almoſt any ſoil and expoſure, in common with other hardy deciduous trees.

Moſt of the ſpecies, except the *Acer Campeſtre* and *Pſeudo-platanus*, are natives originally of diſtant climates, ſome of America, and others of different parts of the continent of Europe, and the countries annexed to their names; but moſt of the ſorts are now cultivated in the Engliſh nurſeries, for the ſupply of noblemen and gentlemen's plantations.

Theſe trees are of ſtature from about twenty to forty feet or upward, the Greater Maple frequently exceed that height, and the Norway, Aſh-leaved, Sugar, and Italian Maple are likely to attain that height at leaſt in this country; but the other ſpecies rarely obtain more than twenty or thirty feet ſtature. Moſt of the ſpecies branch out irregularly at firſt, but in time form pretty full and regular heads, ornamented chiefly with oppoſite leaves. The leaves are univerſally ſimple, except the *Acer Negundo*, and are from about three to ſix or eight inches broad, and generally divided into three or five lobes, ſome but ſlightly, others deeply divided; and ſome have the edges of the lobes entire, others indented, and ſome are ſerrated or ſawed, by which diſtinction the different ſpecies may with facility be detected. The flowers ariſe chiefly from the ſides of the young branches, and are produced in a racemus, and ſome in a corymbus, &c. appearing in ſpring and early in ſummer, and are ſucceeded by ripe ſeed the beginning of autumn.

Moſt of the ſorts ripen ſeed perfectly in England, which is remarkably free of growth, as is evident by that which ſcatters promiſcuouſly from the trees, from which many young plants often riſe naturally, particularly the Common and Greater Maples.

The *Common Maple* grows wild in woods and hedges. This tree attains but a moderate ſtature, and its foliage is ſmall: it is ſometimes admitted for variety in extenſive plantations.

The *Greater Maple* is a ſtately tree, of free growth, decorated with luxuriant foliage, that afford a delightful ſhade, and both the plain and variegated ſort effect an agreeable diverſity in ornamental plantations.

The *Acer Rubrum* is a tree of moderate growth, the leaves are large, and the flowers have great beauty, particularly thoſe of the ſecond variety, i. e. Sir Charles Wager's Flowering Maple, which ariſe in numerous large cluſtering heads, and are extremely conſpicuous and ornamental.

The *Acer Saccharinum*, *Platanoides*, and *Aſh-leaved Maples*, are all three large growing trees, and are proper to be employed in outward plantations; as their leaves are of different ſizes and ſhapes, and of lighter and darker ſhades, they afford a pleaſing variety: if ſome trees are diſperſed in parks and other extenſive places, they will diverſify the general ſcene; the corymbus flowers of the *Acer Platanoides* have ſingular beauty; and the ſort with variegated leaves forms a pretty diverſity.

The firſt of the above three trees, i. e. *Sugar Maple*, obtained the name from the circumſtance of its imparting a great quantity of

ſweet juice, with which a tolerable good ſugar is prepared. This juice is obtained by piercing or tapping the trees, and from which parts the juice continue to iſſue for ſeveral days. This is greatly practiſed in America, where the trees are large and numerous. The property of the ſweet juice is not however limitted to this particular ſpecies, for even the Greater Maple, and ſome other large kinds, are found to emit great quantities, little inferior to that of the ſpecies under conſideration.

The *Penſylvanian* and *Montpelier Maples* are trees of moderate growth, and the leaves are of a middle ſize; thoſe of the latter are of a thick conſiſtence, have a ſhining ſurface, and continue late in autumn, which render them of eſteem for ornamental purpoſes.

The *Acer Opalus* is a noble tree; it acquires a conſiderable ſtature, hath a ſpreading head, adorned with large and beautiful foliage.

The *Cretan* and *Tartarian Maple* are trees of humble ſtature, and are very proper for interior plantations.

*Uſes in Gardening, Propagation, &c.*

For purpoſes in gardening, moſt of the ſpecies are proper to be employed in ornamental plantations and parks, and other extenſive departments, in aſſemblage with other hardy deciduous trees of ſimilar growth; in forming detached clumps, groves, thickets, avenues, ſhade for ſpacious walks and rural ſeats; and in forming running or continued plantations on the boundaries of extenſive lawns, parks, &c.

All the ſorts may be propagated with great facility by ſeed, and moſt of them may likewiſe be encreaſed by layers and cuttings.

The ſeed grows freely in the common ground, and the time of year for ſowing it is autumn, ſoon after it is ripe, or early in ſpring; but the former is generally the moſt ſucceſsful ſeaſon, as that of the ſpring ſowing is apt to riſe ſtraggling. Chooſe a light mellow ſpot, and after being dug, divide it into one or more beds, three or four feet wide; ſmooth the ſurface and ſow the ſeeds thereon, and cover them a little more than half an inch deep. The plants will appear in April or May, and by Michaelmas they will be eight or ten inches high; when, or in the enſuing ſpring, ſome of the largeſt may be tranſplanted, and in autumn following the whole; planting them in the nurſery in rows two feet and half diſtance.

They ſhould be permitted to have at leaſt four or five years growth in the above nurſery, or till they have attained five or ſix feet ſtature, when they may be employed in plantations.

The propagation by layers and cuttings may be performed in autumn; chooſe the ſhoots of the young branches, and in one year they will be well rooted. See LAYERS and CUTTINGS.

The variegated kinds are encreaſed either by layers, cuttings, or inoculation, though ſometimes the ſycamore comes variegated from the ſeed of the ſame kind; but the moſt certain means of obtaining them is by the above methods, when every plant ſo raiſed will have the ſame variegations as the parent tree.

All the varieties of theſe trees are propagated for ſale in moſt of the nurſery gardens.

ACETOSA, Sorrel. See RUMEX.

ACHILLEA, Milfoil, Yarrow, and Sneezwort.

The plants of this genus are herbaceous fibrous rooted perennials, of hardy growth; ſome merit eſteem for medical purpoſes, and ſome as plants of ornament.

Claſs and order, *Syngeneſia Polygamia Superflua.*

*Characters.*] The FLOWER is compound and radiated. CALIX, the common cup is oval and imbricated. COROLLA, ſeveral tubular hermaphrodite florets compoſe the diſk, and five flat female florets the radius. STAMINA, five capillary filaments in each hermaphrodite floret. PISTILLUM, a ſmall germen, ſlender ſtyle, and obtuſe ſtigma. PERICARPIUM none, the ſeeds being lodged in the calix.

There are twenty ſpecies, thoſe that demand attention are,

[1]ACHILLEA *Millefolium.*

*Common Milfoil or Yarrow.*] Achillea with doubly pinnated leaves, the lobes cut into many narrow ſegments and white umbels.

*Variety.*] Common Milfoil with purple umbels.

[2]ACHILLEA *Ptarmica.*

*Ptarmica or Common Sneezwort.*] Achillea with ſpear-ſhaped pointed leaves, having the edges ſharply ſerrated, and white umbels.

*Variety.*] Ptarmica with double flowers.

[3]ACHILLEA *Ageratum.*

*Ageratum or Sweet Maudlin.*] Achillea with ſpear-ſhaped obtuſe leaves, with the edges acutely ſawed, and yellow umbels.

*Variety.*] Long-corymbus flowered ſweet Maudlin.

[4]ACHILLEA

[4]ACHILLEA *Tomentoſa.*

*Hoary, bright, yellow Milfoil.*] Achillea with pinnated, rough, hoary leaves; the lobes very narrow and indented, and bright yellow umbels.

[5]ACHILLEA *Clavenna.*

*Pinnatifid hoary Alpine Sneezwort.*] Achillea with pinnatifid, plain, obtuſe, hoary leaves, and flat white umbels.

[6]ACHILLEA *Nana.*

*Dwarf hoary Alpine Milfoil.*] Achillea with pinnated and indented downy leaves, and globular white umbels.

[7]ACHILLEA *Ægyptiaca.*

*Ægyptian hoary Sneezwort.*] Achillea with pinnated hoary leaves, the lobes obtuſely ſpear-ſhaped, ſawed, and indented, and yellow umbels.

[8]ACHILLEA *Abrotanifolio.*

*Southernwood-leaved Milfoil.*] Achillea with pinnated, ſupra-decompound, hoary leaves; the ſegments very narrow, and ſtand remote, and yellow umbels.

[9]ACHILLEA *Macrophylla.*

*Long fever-few-leaved Sneezwort.*] Achillea with pinnated, deeply ſerrated, plane leaves; the outermoſt wings the largeſt, and looſe white umbels.

[10]ACHILLEA *Pubeſcens.*

*Downy Tanſey-leaved Sneezwort.*] Achillea with pinnated downy hoary leaves, the lobes ſpear-ſhaped, deeply cut and ſerrated, and pale yellow umbels.

[11]ACHILLEA *Nobilis.*

*Noble or Sweet Milfoil.*] Achillea with doubly pinnated, finely divided, ſweet ſcented leaves, the lower ones plane and naked, the upper obtuſe and downy, and a convex white umbel.

*Variety.*] Noble Milfoil with pale red umbels.

[12]ACHILLEA *Santolina.*

*Lavender-cotton-leaved Eaſtern Sneezwort.*] Achillea with indented briſtly hoary leaves, the denticles almoſt entire, awl-ſhaped and reflexed, and large yellow umbels.

Of the above ſpecies, the *Purple Milfoil*, *Double Ptarmica*, and *Achillea Tomentoſa* are the moſt commonly known and cultivated.

All the ſpecies are hardy herbaceous perennials, that proſper in any common ſoil, and obtain from ſix inches to three feet ſtature, ſurmounted by flowery umbels.

The roots are fibrous, which in many ſpecies creep in a horizontal direction, and multiply exceedingly.

The leaves and flower-ſtalks riſe from the root annually. The ſtalks attain different heights, from half a foot to a yard or upward, decorated with leaves, and terminated by the umbels of flowers. The leaves in ſome are ſimple, but in the greater part winged or pinnated, and divided into a multitude of minute ſegments, in the manner of tanſey, wormwood, chamomile, &c. which in moſt ſpecies poſſeſs different degrees of hoarineſs, and have an ornamental effect in a garden.

The flowers ſingly are ſmall, but numerous, many being produced together from the ſummit of the ſtalks, in a ſort of umbel or rather corymbus, appearing in June, July, Auguſt, and September, and are ſucceeded by ripe ſeed in autumn.

The two firſt ſpecies grow naturally in England, all the others were obtained from diſtant parts, as the Alps, France, Spain, Italy, and the Archipelago, &c.

The *Achillea Millefolium* and *Ptarmica* attain two or three feet ſtature. The common ſpecies grow wild in paſtures, woods, and ſides of banks. They are eſteemed for medical uſes; and the two varieties, *Purple Milfoil* and *Double Sneezwort* are admitted in gardens as ornamental plants. The roots of the *Common Sneezwort* are remarkable for provoking ſneezing; and being acrid, a bit chewed in the mouth, often procures a temporary reſpite in the tooth-ach.

The *Sweet Maudlin* riſes two feet high, the leaves impart a fragrant odour. The common ſpecies is cultivated for medicine, and the variety is retained as a flowering plant.

The *Achillea Tomentoſa*, *Clavennæ*, *Nana*, and *Ægyptiaca*, are of humble growth, ſeldom obtaining more than from ſix to twelve inches height, have very hoary leaves, and adorned with moderately large, compact, and very ornamental umbels.

The other five ſpecies grow from eighteen inches to a yard high, the leaves chiefly hoary, and the umbels large.

*Uſe in Gardens, Propagation, &c.*

For purpoſes in gardens, the ſingularity of the hoary leaves of many ſorts form a pretty variety, and the flowers being conſpicuous, and continue two or three months, render the plants proper furniture for common borders, and the fronts of ſhrubbery compartments.

All the ſorts may be readily propagated by parting the roots any time in autumn or ſpring, and ſome alſo by ſlips and cuttings of the

the ſtalks, &c. in a ſhady border in ſummer.

Many of the ſorts furniſh plenty of ſeed, by which they may likewiſe be raiſed by ſowing them in March or April, in a bed of light earth, and the plants will be fit to tranſplant for good at Michaelmas, and will flower the following ſummer.

ACHRAS, Sapota-Tree, or Mammee Sapota.

This genus retains but two ſpecies, which are of the tree kind, natives of the warm parts of America; their merit here is merely for variety, and require the conſtant aid of a ſtove.

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX, ſix acute permanent leaves. COROLLA, five heart-ſhaped petals joined at the baſe. STAMINA, ſix ſhort filaments, having arrow-pointed antheræ. PISTILLUM, an oval germen, a ſhort ſtyle, and blunt ſtigma. PERICARPIUM is of the apple kind, containing one or two oval hard nuts.

The ſpecies are,

[1]ACHRAS *Sapota.*

*Common Sapota-Tree* ] Achras with oblong oval leaves, and ſmooth top-ſhaped fruit.

[2]ACHRAS *Mamoſa.*

*The Mammee Sapota of the Weſt Indies.*] Achras with ſpear-ſhaped leaves, large oval fruit, both ends terminating in a ſharp point.

Theſe trees in America riſe thirty feet high, but thoſe cultivated here in our ſtoves appear as ſhrubs; the leaves are large, thoſe of the ſecond ſort approach near a foot in length, the flowers are of a cream colour, and are ſucceeded by a kind of apple, conſiſting of thick ſucculent pulp, of a luſcious taſte.

Both the ſpecies are propagated here by ſeed, i. e. the nuts or ſtones included in the fruit, which muſt be procured from the Weſt Indies, and as ſoon as they arrive, planted in pots, and plunged in a hot-bed under frame and glaſs, or in the bark bed in the ſtove.

Their culture is the ſame as other woody exotics, of ſimilar temperature. See STOVE PLANTS.

ACHYRANTHES.

The plants are chiefly herbaceous, and ſomewhat ſhrubby perennials, exotics, of the temperature of green-houſe and ſtove plants, retained more for variety than beauty.

Claſs and order, *Pentandria Monogynia.*

*Character.*] CALIX, five acute ſtiff permanent leaves. COROLLA, none. STAMINA, five filaments with ſmall antheræ. PISTILLUM, a ſingle ſtyle having a bifid ſtigma. PERICARPIUM none; one roundiſh ſeed lodged in the calix.

There are eight or nine ſpecies, but poſſeſſing little merit, there is but one ſort commonly known among gardeners, which is,

ACHYRANTHES *Aſpera.*

*Common Sicilian and American Achyranthes.*] Achyranthes with erect ſtalk, ob longpointed leaves, and adpreſſed ſpikes of flowers, having reflexed cups.

The plant riſes a yard high, decorated with oblong leaves, and long ſpikes of apetalous flowers, which proceed from the ends of the branches, appearing in July and Auguſt, and ripen ſeeds in September.

This plant ſhould be potted and kept in the ſtove, or good green-houſe, in winter.

The propagation of this plant may be effected by ſeed and by cuttings, aſſiſted by a hot-bed.

The following are ſome of the other ſpecies of leſs note.

[1]ACHYRANTHES *Lanata.*] Woolly cupped African Achyranthes, with whorled ſpikes.

[2]ACHYRANTHES *Indica.*] Indian Achyranthes, with oval waved leaves and reflexed flowers.

[3]ACHYRANTHES *Sanguinolenta.*] Bloody leaved Achyranthes.

[4]ACHYRANTHES *Lappacea.*] Climbing lappaceous fruited Achyranthes.

[5]ACHYRANTHES *Muricata.*] Shrubby prickly cupped Achyranthes, with alternate leaves.

Theſe are chiefly of the tribe and temperature of the common ſpecies.

ACONITUM, Aconite, Monk's-hood, or Wolf's-bane.

This genus furniſhes ſeveral ſpecies of hardy herbaceous perennials, eſteemed as ornamental garden plants, obtaining in ſtature from two to ſix feet, their ſtems terminated by elegant ſpikes of flowers.

Moſt of the plants of this genus poſſeſs a poiſonous quality.

Claſs and order, *Polyandria Trigynia.*

*Characters.*] CALIX, none. COROLLA, compoſed of five irregular petals, one placed above, one below, and two ſideways, the upper one formed like a hood, and covers the other parts; and in the bottom are two nectariums. STAMINA, numerous filaments, having erect antheræ. PISTILLUM, three or five germina, as many ſtyles, ſurmounted by reflexed ſtigma. PERICARPIUM, three or five

ſive oblong capſules, of one cell, filled with angular ſeeds.

The ſpecies of moſt note are,

[1]ACONITUM *Pyramidale.*

*Common Pyramidal blue Aconite.*] Aconite with leaves divided into many narrow ſegments, and very long pyramidal ſpikes of blue flowers.

[2]ACONITUM *Lycoctonum.*

*Poiſonous yellow Aconite.*] Aconite with palmated, finely divided, hairy leaves, and yellow ſpikes of flowers.

*Variety.*] Large poiſonous yellow Aconite, with palmated ſmooth leaves.

[3]ACONITUM *Anthora.*

*Salutiferous or Wholeſome yellow Aconite.*] Aconite with leaves divided into many long narrow ſegments, and ſulphur-coloured ſpikes.

[4]ACONITUM *Napellus.*

*Napellus or Large blue Aconite.*] Aconite with leaves cut into many linear ſegments, the upper ones broadeſt and marked with a line, and large blue flowers.

*Varieties.*] Roſe-coloured Napellus.—White-flowered Napellus.—Variegated blue and white Napellus.

[5]ACONITUM *Pyrenaicum.*

*Pyrenæan ſquamous leaved yellow Aconite.*] Aconite with leaves divided into long ſegments, theſe deeply jagged into many narrow parts, and lie over one another like ſcales, and pale yellow ſpikes.

[6]ACONITUM *Cammarum.*

*Wedge-lobed Aconite.*] Aconite with leaves divided into many wedge-ſhaped lobes, theſe cut into many acute parts, and large violet-coloured flowers.

*Varieties.*] Wedge-lobed purple Aconite.—Wedge-lobed blueiſh purple Aconite.—Wedge-lobed deep blue Aconite.

[7]ACONITUM *Orientale.*

*Eaſtern tall white Aconite.*] Aconite with palmated leaves, and large white flowers.

[8]ACONITUM *Variegatum.*

*Variegating dwarf blue Aconite.*] Aconite with many parted leaves, the ſegments half cut through, the upper ones the broadeſt, and ſmall ſpikes of variegating blue flowers.

The above eight ſpecies and reſpective varieties are all of the herbaceous tribe, and have perennial roots, but the leaves and ſtems are renewed annually in the ſpring, and periſh in autumn.

The roots of the common ſorts are thick fleſhy tubers, and thoſe of all the ſpecies ſend forth many fibres, and multiply greatly.

The ſtems or flower ſtalks riſe annually from the root, which in different ſpecies attain different heights, from two to ſix feet, erect, round, firm, and cloſely ornamented with leaves below, and numerous flowers upward, arranged in a beautiful erect ſpike, from one to two feet long. The leaves are large and univerſally ſimple, but deeply divided in the palmated manner into many long ſegments; and in ſome, theſe again are variouſly jagged, lacinated, or ſubdivided into many narrow parts in different arrangements, that in the whole the leaves form a ſingularly pretty variety.

The flowers ariſe along the upper part of the main ſtem, ſurrounding it in great numbers, and as the top advances in height, it furniſhes a daily ſucceſſion ſix or eight weeks, and all the ſorts afford plenty of ſeed in autumn.

The ſeaſon of flowering is from the middle of May until September; the *Aconitum Pyramidale* is the firſt in bloom.

*Uſe in Gardens, Propagation, &c.*

Conſidered as ornamental plants, they make a tolerable appearance; their flowers continue long, which, together with the diverſity of their leaves, afford a ſource of variety to the curious. They are adapted for large borders, and may be introduced in vacant ſpaces in ſhrubbery clumps, the compartments on the boundaries of lawns, or thoſe contiguous to ſhady walks, &c. as they will ſucceed between and under trees where the ſhade is not conſiderable, particularly the common blue ſorts.

Great caution ought however to be uſed in admitting them in parts of a garden where children frequent.

With reſpect to the bad quality of theſe plants; they, taken inwardly, prove a deadly poiſon, and the effluvia of the flowers communicate their noxious quality in ſome degree. It is remarkable that the blue Aconites are much more virulent than the yellow kinds. The root of the *Aconitum Anthora* is accounted an antidote to the poiſon of all the other ſpecies, and is the ſort that is uſed in medicine. It is however affirmed, that if this ſort grow near any of the others, it attracts their baneful property, and becomes like them poiſonous.

Of the bad qualities of theſe plants, many avail themſelves to get rid of vermin. A decoction of the roots deſtroy bugs; the ſame part powdered and adminiſtered in bread, or

any

any other palatable vehicle, to rats and mice ſoon proves mortal.

All the ſpecies, &c. are eaſily propagated by ſeed, alſo by parting the roots, which, of the common ſorts, every bit having an eye or bud, will readily grow.

The ſeed grows freely in a bed or border of common earth, and may be ſown early in ſpring, or rather in autumn, ſoon after it is ripe, and in April or May following the plants will appear; give occaſional weeding and watering until the beginning of Auguſt, then prick them three or four inches diſtant in a ſhady border, and in autumn or ſpring after tranſplant them where they are finally to remain.

The propagation by dividing the roots may be effected any time from October till March.

The chief culture they require is to have their decayed ſtalks cut down in autumn.

The plants are natives chiefly of the Alps, Pyrenæan, Helvetian, and other mountainous parts of the continent. The common blue ſorts have been long inhabitants of almoſt every garden, and all the others may be had at the nurſeries.

ACORN, a kind of nut, and is the fruit of all the ſorts of oak, evergreen-oak, and cork-trees. See QUERCUS.

ACORUS, Sweet Ruſh, or *Calamus Aromaticus*.

There is but one known ſpecies, which is a hardy herbaceous perennial of the flag kind, and grows wild, but having a fragrant aromatic odour, is admitted in gardens.

The claſs and order, *Hexandria Monogynia*.

*Characters.*] CALIX none. COROLLA, ſix concave petals, and the flowers arranged in a ſort of amentum. STAMINA, ſix filaments, having double antheræ. PISTILLUM, a riſing germen, no ſtyle, but a ſmall prominent ſtigma. PERICARPIUM, a ſhort triangular capſule, containing oval ſeeds.

The ſpecies is,

ACORUS *Calamus*.

*Calamus Aromaticus, or Sweet Ruſh.*]

The plant is a ſort of aquatic, growing naturally in ditches and watery places.

It hath thick jointed roots, long narrow leaves, and flowers produced in a ſort of amentaceous ſpike, ſupported upon a kind of leaf-like ſtalk, appearing in June and July.

The plant grows wild in many parts of the kingdom, and the roots may be tranſplanted in autumn into any moiſt ſoil of a garden, but unleſs the roots are in water they rarely flower.

The nurſery gardeners cultivate the plant for ſale.

ACTÆA, Herb-Chriſtopher, or Bane-Berries.

The plants are herbaceous perennials, of hardy temperature, and tall growth, and eſteemed as plants of ornament, being adorned with curiouſly branched leaves, and numerous ſnow-white flowers, in large ſpikes.

Claſs and order, *Polyandria Monogynia*.

*Characters.*] CALIX, four concave blunt deciduous leaves. COROLLA, four large obtuſe petals. STAMINA, many filaments, having erect double antheræ. PISTILLUM, an oval germen, no ſtyle, the germen crowned by a depreſſed ſtigma. PERICARPIUM, one oval globular berry, of one cell, containing four ſeeds.

There are five or ſix ſpecies, thoſe that claim attention are,

[1]ACTÆA *Spicata*.

*Common ramoſe ſpiked Herb-Chriſtopher*, with black berries.

[2]ACTÆA *Alba*.

*White berried American Herb-Chriſtopher.*] Actæa with a tuberous root, compact oval ſpike, and white berries.

[3]ACTÆA *Racemoſa*.

*Cluſtered long ſpiked American Herb-Chriſtopher.*] Actæa with talleſt ſtalks, and very long reflexed ſpikes.

The firſt ſort grow naturally in woods in many parts of England, the others were obtained from North America.

The plants are perennial in root, but the leaves and ſtems riſe annually in ſpring, attain three or four feet ſtature, flower in ſummer, and decay in autumn.

The roots are compoſed of thick fibres, thoſe of the ſecond are tuberous and knobbed.

The ſtems or flower ſtalks of the firſt and ſecond ſorts riſe two feet and half high, that of the third often four or five; they grow erect, and are adorned below with leaves, and the upper part with numerous flowers, arranged in very ornamental ſpikes terminating the ſtalks. The leaves are both radical and elevated on the ſtalks, they are compound, branched, very long, and compoſed each of twenty-ſeven lobes or folioles, the common foot-ſtalk of each leaf branching or dividing by threes into nine ſmaller, each of which ſuſtain three lobes, and in ſome the radical or root leaves, including their folioles, approach two feet in length.

The

The flowers are ſnowy white, and their numbers in each ſpike render them very conſpicuous and pretty; they appear in May, June, and July, and thoſe of the firſt and ſecond are ſucceeded by ſeed in autumn, but the third rarely produce any in England.

The ſeed of theſe plants are contained in ſmall berries, the ſize of peas.

Theſe berries are ſuppoſed to be noxious in their quality. A ſingle berry of the common ſort is ſaid to be inſtant death to poultry and other birds.

As furniture for the pleaſure ground, all the three ſpecies may be employed in any of the common compartments, and are adapted for ſhady borders, but not immediately under trees, and may occupy vacant ſpaces between deciduous ſhrubs in the moſt conſpicuous parts of ſhrubberies.

Their propagation may be readily effected by ſeed in the common ground, which may be ſown in the ſpring or autumn; it however is obſervable, that when ſown in autumn, the plants riſe freely the following ſpring, and thoſe of the ſpring ſowing are apt to riſe ſtraggling.

Tranſplant them in autumn where they are to continue, and they will flower the following year.

ACULEUS, (a Needle.) By botaniſts it is expreſſive of a prickle or ſharp point, a ſpecies of armature with which the ſtems and branches of ſeveral plants are furniſhed, exemplified in the roſe, raſpberry, &c.

The prickle here alluded to differs from the ſpine or thorn, *ſpina*, as being only a prolongation or detached portion of the outer bark of the plant, as is apparent by ſuch prickles being readily detached from the ſtem or branch along with the bark; whereas, the ſpine or thorn is more rigid and protruded from the wood of the plant, ſuch as in hawthorn, buckthorn, three-thorned acacia, &c. and cannot be detached without rending ſome part of the ſubſtance of the wood. See SPINA.

ADANSONIA, Æthiopian Sour Gourd, or African Calabaſh-Tree.

This genus furniſhes but one known ſpecies, which is a deciduous tree, of amazing bulk in its native ſoil, which is Africa, and is retained here in ſtoves as a curioſity.

Claſs and order, *Monadelphia Polyandria*.

*Characters.*] CALIX is cup-ſhaped, five-parted at the brim, and deciduous. COROLLA, five roundiſh petals. STAMINA, numerous filaments united below into one body,



and kidney-ſhaped antheræ. PISTILLUM, an oval germen, many-branched ſtyle, having as many hairy ſtigma. PERICARPIUM large, oval, membranous capſule of many cells, filled with a fungous ſour pulp, containing many ſeeds.

The ſpecies is,

ADANSONIA *Baobab.*

*Baobab, or Æthiopian Sour Gourd.*]

The tree is a native of Senegal, and other parts of Africa, where it attains an enormous ſize, adorned with digitate leaves, of three or five ſpear-ſhaped ſpreading lobes.

With reſpect to its merit in this country, we only conſider it merely as a plant of ſingularity, and requires the indulgence of a ſtove. It is propagated by ſeed procured from abroad, which ſhould be ſown in pots, and plunged either in a ſubſtantial hot-bed, under glaſſes, or that in the hot-houſe, in which department the plants muſt be always retained.

There are ſome plants now in England twelve or fifteen feet high.

This monſtrous tree derives its preſent name *Adanſonia*, given by Linnæus, in honour of Mr. Adanſon, an eminent French botaniſt, who travelled in Senegal, and ſaw many of the trees growing, and the deſcription he gives of their enormous bulk is truly amazing.

The diameter of the trunk, he ſays, frequently exceeds twenty-five feet, and its ſpreading top that of a hundred and twenty, and each branch equal to a monſtrous tree in Europe, and the horizontal roots have meaſured upwards of an hundred feet long, and yet, amazing as theſe dimenſions are, the talleſt trees rarely exceed ſixty or ſeventy feet. The age of the tree is perhaps no leſs remarkable than its enormous ſize, for as the ſame gentleman relates, he diſcovered ſome trees about five or ſix feet diameter, on the bark of which were deeply engraved or cut many European names, ſome of which were dated, which inſcriptions he thinks ſufficient to determine pretty near the age the trees may attain, as ſuppoſing thoſe in queſtion, according to the date, grew ſix feet diameter in two hundred years, how many centuries muſt be requiſite to give them the aſtoniſhing diameter of twenty-five feet!

ADENANTHERA, Baſtard Flower-Fence.

The plants are of the tree kind, evergreen, and exotics, of the growth of India, and retained here in ſtoves by way of variety.

Claſs and order, *Decandria Monogynia*, ten ſtamina, one ſtyle.

*Characters.*] CALIX monophyllous, and five-parted at the brim. COROLLA campanulated, and formed of five reflexed petals. STAMINA, ten filaments with roundiſh antheræ. PISTILLUM, an oblong germen, one ſtyle, and ſingle ſtigma. PERICARPIUM, a compreſſed pod, having many ſmooth ſeeds.

The ſpecies are,

ADENANTHERA *Pavonina.*] Adenanthera with decompound or branching ſmooth leaves.

ADENANTHERA *Falcataria.*] Adenanthera with decompound leaves, woolly on the upper ſides.

Theſe trees attain a large ſize in India. Both ſpecies are adorned with large and beautifully branched leaves, the ſingularity of which are the merit of the plants in this country.

They are raiſed from ſeed procured from abroad, and its vegetation muſt be effected by artificial heat, the plants kept in pots, and continued always in the ſtove.

ADIANTHUM, *Capillus Veneris*, or Maiden-hair.

The plants are herbaceous and perennial; there are many ſpecies, one or two of which are admitted in gardens for variety.

This genus is of the claſs *Cryptogamia*, flowers imperfectly viſible.

*Characters.*] The plants are of the fern tribe, whoſe flowers are either entirely concealed or imperfectly viſible, ſee FILICES; which, in the plants in queſtion, are fixed in numerous ſmall ſpots upon the back of the leaves, the points of which are reflexed.

The ſpecies that merit notice are,

[1]ADIANTHUM *Capillus Veneris.*

*True Maiden-hair.*] Adianthum with decompound, alternate, wedge-lobed leaves.

[2]ADIANTHUM *Pedatum.*

*Foot-ſhaped Canadian Maiden-hair.*] Adianthum with foot-ſhaped pinnated leaves with gibbous lobes, and fructifications in the diviſions.

The firſt ſort is a native of France, Italy, and places adjacent; the ſecond of Canada, and both require ſhelter from froſt.

The roots are fibrous and creeping.

With reſpect to their ſtems, they are not to be diſtinguiſhed from the foot-ſtalks or ribs of the leaves, as is common to moſt of the fern tribe, ſee FILICES; they, in both ſpecies, divide into many leaves, which, in the *Capillus Veneris* are like thoſe of coriander, and fragrant and agreeable in taſte.

Both theſe plants are propagated by dividing their roots, which ſhould here be planted in pots of dry ſoil.

ADONIS, *Flos-Adonis*, i. e. Adonis Flower, ſometimes called Bird's-eye.

This genus retains ſeveral ſpecies of herbaceous plants, of the flowery race; two are annual, the others perennial, of ſtature from twelve to twenty inches, and with every ſtalk, branch, and ſhoot, terminated by ſolitary flowers.

Claſs and order, *Polyandria Polygynia.*

*Character.*] CALIX pentaphyllous, coloured, and deciduous. COROLLA, from five to twelve petals. STAMINA, many ſhort filaments, having reflexed antheræ PISTILLUM, many germina and ſtigma. PERICARPIUM none, many naked ſeeds being attached to the pedicle, forming an obtuſe ſpike.

There are five ſpecies; thoſe of note are,

[1]ADONIS *Annua.*

*Common annual red Adonis.*] Adonis with flowers having ſometimes eight petals, theſe red and marked with dark ſpots.

[2]ADONIS *Æſtivalis.*

*Summer flowering yellow annual Adonis.*] Adonis with flowers, having generally five petals, of a pale yellow colour.

[3]ADONIS *Vernalis.*

*Spring flowering yellow perennial Adonis.*] Adonis with large yellow flowers, having about twelve petals.

The two firſt ſorts are annual, i. e. the plants come up, attain their full growth, flower, perfect their ſeeds, and periſh root and branch the ſame year. They are of buſhy growth, from twelve to eighteen inches high, branching every way from the bottom, decorated with abundant foliage, finely cut or divided, and the ends of all the branches and lateral ſhoots are adorned with flowers, which ſtand ſingly.

Theſe two flower in May, June, and July, and the ſeeds ripen in autumn.

The third ſort is perennial in root, which is fibrous, but the ſtalks are renewed annually.

The ſtalks of this riſe eighteen or twenty inches high, ſeveral ariſing from the ſame root, each of which is ſurmounted by a large yellow flower, which appear in April, and the ſeeds ripen in autumn.

All the three ſpecies are proper furniture for

for common borders, or to adorn the fronts of the ſhrubbery compartments, in aſſemblage with other herbaceous plants.

Their propagation is by ſeed in the common ground, ſown in autumn, or early in the ſpring, i. e. February or March. The third ſort alſo by off-ſets of the roots.

The two firſt ſorts ſhould be ſown in the places where it is deſigned the plants are to flower, for they do not ſucceed by tranſplantation; it is moſt eligible to ſow them in ſmall patches, ſee HARDY ANNUALS, covering the ſeed near half an inch deep; when the plants are two inches high, thin them, leaving only three of the ſtouteſt in each patch; their farther culture is occaſional weeding and watering.

If the ſeed of theſe two are ſown in autumn, i. e. September or October, the plants flower earlier by a month or two than thoſe of the ſpring ſowing, as is evident by the plants ariſing from the ſcattered or ſelf-ſown ſeeds.

The following are alſo of this genus.

ADONIS *Apennina.*] Apennine Adonis with large flowers, having fifteen petals.—ADONIS *Capenſis.*] Cape Adonis with doubly ternate leaves, the lobes cut and indented.

ADOXA, *Tuberous Moſchatel,* or Hollow-root.

There is but one ſpecies, a tuberous rooted, hardy, herbaceous perennial, of diminutive growth, eſteemed as a flowering plant.

Claſs and order, *Octandria Tetragynia.*

*Character.*] CALIX, monophyllous, bifid, and permanent. COROLLA, monopetalous, divided into four acute ſegments. STAMINA, eight filaments with roundiſh antheræ. PISTILLUM, the germen reſting upon the calix, ſupporting four ſtyles. PERICARPIUM, a round berry of four cells, containing four ſeeds.

The ſpecies is,

ADOXA *Moſchatellina.*] Moſchatel or Muſk-ſmelling Adoxa, with a bulbous fumitory leaf.

The plant grows wild in woods and ſhady places, and is admitted in gardens more for variety than beauty.

It grows five or ſix inches high, the root is tuberous and pointed, from which riſe ſmall leaves, having many minute lobes, the ſtalk is ſlender, and adorned at top with four or five ſmall whitiſh flowers, which appear in April, and the berries ripen in May.

The propagation of this plant is by the off-ſets of its root, when the leaves decay in ſummer.

It proſpers beſt in the ſhade.

ÆSCHYNOMENE, Baſtard Senſitive Plant.

There are ſix ſpecies, three or four of which are annual, the others perennial, of ſomewhat ſhrubby growth, natives of hot climates, and preſerved here in ſtoves for variety.

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX monophyllous, cut into two parts, the upper ſegment bifid, the lower trifid. COROLLA is *papilionaceus*, or butterfly-ſhaped, the ſtandard large and heart-formed, the wings ſhort and oval, and the keel long and moon-ſhaped. STAMINA, ten filaments; nine united, one ſeparate. PISTILLUM, an oblong germen, arched ſtyle, and ſimple ſtigma. PERICARPIUM, an oblong deeply-jointed pod, each articulation having one ſeed.

The ſpecies that merit notice are,

[1]ÆSCHYNOMENE *Aſpera.*

*Rough ſtalked Æſchynomene.*] Æſchynomene with rough herbaceous ſtalks, and deeply jointed rough pods.

[2]ÆSCHYNOMENE *Arborea.*

*Tree Æſchynomene.*] Æſchynomene with a tree-like ſmooth ſtem, ſmooth jointed pods, with the articulations half heart-ſhaped.

[3]ÆSCHYNOMENE *Grandiflora.*

*Great flowered Æſchynomene.*] Æſchynomene with a tree-like ſtem, large flowers, and long ſlender pods.

[4]ÆSCHYNOMENE *Seſban.*

*Ægyptian obtuſe lobed Æſchynomene.*] Æſchynomene with a ſmooth ſtem, leaves having obtuſe lobes, and cylindrical equal pods, not jointed.

The firſt ſpecies is chiefly annual in this country; the others are perennial both in root and ſtem in their native ſoil, and may be continued ſo here by the aid of a ſtove.

They obtain in height from four to ſeven feet, the ſtem of the firſt is herbaceous, and attain four feet height; that of the others is woody, and riſe ſeven feet high, erect, and divide into branches upward, where all the ſpecies are cloſely adorned with leaves, which are univerſally winged, and compoſed of many folioles or lobes, arranged along each ſide of the middle rib. The flowers iſſue from the angles of the leaves; they are compoſed each of four petals, and are of the pea-bloom form, ariſe two or three together, the colour chiefly

yellow, thoſe of the fourth ſort in long pendulous ſpikes, and aſſume a copper colour, appearing in ſummer, and are ſucceeded by long legumenoſe pods in autumn.

The propagation of theſe plants is by ſeed, aſſiſted by a hot-bed in March or April; when the plants are two or three inches high, tranſplant them into ſeparate ſmall pots, and plunge them in the hot-houſe.

ÆSCULUS. The Horſe-Cheſnut-Tree.

There are but two ſpecies and ſome varieties, all of which are hardy deciduous trees, eſteemed principally for purpoſes of ornament in gardens and parks, &c.

Claſs and order, *Heptandria Monogynia.*

*Characters.*] CALIX is monophyllous, and five-parted at the brim. COROLLA, five roundiſh petals inſerted into the calix. STAMINA, ſeven declinated filaments, having erect antheræ. PISTILLUM, a roundiſh germen, ſingle ſtyle, and pointed ſtigma. PERICARPIUM, the calix becomes a large round prickly capſule of three cells, including one or two nuts.

The ſpecies and varieties are,

[1]ÆSCULUS *Hippo-caſtanum.*

*Common Horſe-Cheſnut.*] Æſculus with digitate leaves, having ſeven entire lobes, ſeven ſtamina to the flowers, and prickly capſules.

*Varieties.*] Common Horſe-Cheſnut with gold ſtriped leaves.—Common Horſe-Cheſnut with ſilver ſtriped leaves.

[2]ÆSCULUS *Pavia.*

*Pavia or Scarlet Horſe-Cheſnut.*] Æſculus with digitate leaves, having five or ſix ſawed lobes, red flowers, having eight ſtamina and ſmooth capſules.

The firſt ſpecies is originally a native of Aſia, the ſecond of America, but both ſorts are extremely hardy, and proſper here in any common ſoil or expoſure.

The Common Horſe-Cheſnut and varieties grow thirty or forty feet high. The trees aſſume a formal growth, the branches extending regularly on every ſide, and diminiſh ſo gradually in length from the bottom upward, as to give the head a beautiful conic form, which in ſummer is abundantly furniſhed with luxuriant foliage, and adorned with innumerable large ſpikes of white flowers, tinged with red, ariſing in erect poſition at the extremity of almoſt every ſhoot, which are very conſpicuous at a conſiderable diſtance.

The ſecond ſpecies, Scarlet Horſe-Cheſnut, obtain twelve or fifteen feet ſtature, the branches moderately ſpreading, the flowers are of a red or ſcarlet colour, grow in ſpikes like thoſe of the common ſort, though not ſo large, but make a pretty appearance.

The leaves of both ſpecies are digitate or fingered, and very large; thoſe of the common ſort have ſeven long, broad, obtuſe lobes; but the ſcarlet kind have rarely more than ſix, which in both ſorts unite at their baſe, where they are attached to the foot-ſtalk, and expand like the fingers of a hand.

The flowers of the Common Horſe-Cheſnut appear in May and beginning of June, and thoſe of the other in July.

The nuts of the common ſort ripen plentifully in autumn, but thoſe of the ſecond do not always ripen perfectly in England: they are uſeful only for propagation; deer and ſwine will eat them greedily.

Abroad the nuts of the common ſort are made into meal and given to horſes, hence they derive the name.

The Common Horſe-Cheſnut has been long cultivated for purpoſes of ornament in extenſive gardens, lawns, parks, &c. It was formerly much employed to form avenues and ſhady walks, but the mode of planting theſe trees in long continued lines or ranges, as was the former practice, affords no variety; nor do the trees appear to advantage in that order of arrangement. They have a fine effect placed ſingly and conſiderably detached, their natural form of growth adapts them for this, and may be employed in extenſive places, to form detached clumps of two, three, four, or more trees together, and in ſome places grouped with others of ſimilar growth, placing them in different forms of arrangement to effect variety.

In large ornamental plantations, ſome trees may be interſperſed to advantage toward the front.

If required to adorn avenues, it ſhould always be in aſſemblage with other trees, ſuch as the lime, greater maple, common or Spaniſh cheſnut, and other formal trees with large foliage.

For purpoſes of ſhade the trees are properly adapted, but not as thickets, becauſe when they ſtand cloſe they do not retain their leaves.

The timber of theſe trees being of no value, they do not merit culture on that conſideration.

The Scarlet Horſe-Cheſnut merits a place in

in all ornamental plantations, where they ſhould occupy ſpaces toward the front, and their ſcarlet flowers will effect an agreeable variety.

*Propagation.*

The common ſort may be raiſed plentifully by planting the nuts, and the beſt time is in February, as if planted in autumn many may rot in winter; but until the ſeaſon of planting arrive, it is neceſſary to preſerve them in ſand, to prevent mouldineſs.

The nuts may either be bedded in, or planted in drills, two or three inches deep; the plants will appear in April or beginning of May; by the end of ſummer they will be eight, ten, or twelve inches high, and in autumn or ſpring following they may be tranſplanted in the nurſery way in rows thirty inches diſtant, and half that diſtance from one another in each row.

In this nurſery let them remain four or five years, when, as the plants are of very quick growth, they will be ſix or ſeven feet high, and may then be employed in plantations.

The two varieties with ſtriped leaves may be encreaſed by layers, and by budding or graſting them upon ſtocks of the common ſort.

The ſcarlet ſort may alſo be propagated by planting the nuts; thoſe of American growth are generally the moſt perfectly ripened; however, as the nuts are ſometimes difficult to be procured, the trees may likewiſe be readily encreaſed by budding or grafting them upon ſtocks of the common horſe-cheſnut.

If it is however intended to raiſe them from nuts, the aid of a hot-bed will greatly facilitate their vegetation.

Plant them in pots in the ſpring, and plunge them in the hot-bed. When the plants appear, indulge them with the free air daily, and in a month remove the pots to the full air to remain till October, then place them to have occaſional ſhelter from froſt, and in ſpring tranſplant them in rows in the nurſery.

ÆTHUSA, Fool's Parſley, or Leſſer Hemlock.

As this is a common weed of noxious quality, we only mention it by way of caution, the leaves of which, while young, are ſo like thoſe of common parſley, as not to be diſtinguiſhed without ſome attention, and has often been inadvertently gathered with it, to the fatal experience of many.

To remove all ſuſpicion, it is moſt eligible to cultivate only the curled leaved parſley, which may with facility be diſtinguiſhed from the weed in queſtion.

AGAVE. Great American Aloe, or Agave.

This is the genus of aloes, of which the common opinion prevails that the plants do not flower until they are a hundred years old. They are herbaceous perennials of the ſucculent tribe, exotics of the temperature of the green houſe and ſtove departments, and retained by the curious as plants of ſingularity.

The *Agave* belong to the claſs and order *Hexandria Monogynia.*

*Characters* ] CALIX none. COROLLA, one large funnel-ſhaped petal, divided at the brim into ſix ſegments. STAMINA, ſix long filaments with narrow antheræ. PISTILLUM, an oblong germen placed below the corolla, ſupporting a long ſtyle, having a three-cornered ſtigma. PERICARPIUM, the germen becomes an oblong triangular capſule of three cells, pregnant with compreſſed ſeeds.

There are eight or ten ſpecies; thoſe of moſt note are,

[1]AGAVE *Americana.*

*Common great American Agave.*] Agave with large widely indented leaves, all the denticles ending in a ſharp ſpine, and branching flower ſtem.

*Varieties.*] Common American Agave with gold ſtriped leaves.—Common American Agave with ſilver ſtriped leaves.

[2]AGAVE *Virginiana.*

*Great Virginian Agave.*] Agave with large widely indented ſpinous leaves, and ſimple flower ſtem.

[3]AGAVE *Vera Cruz.*

*Veracrucian broad leaved Agave.*] Agave with large cloſely indented leaves, all the denticles armed with black ſpines.

[4]AGAVE *Rigida.*

*Stiff narrow-leaved Veracrucian Agave.*] Agave with very narrow ſtiff entire leaves, terminated by a black ſpine.

[5]AGAVE *Vivipara.*

*Viviparous, or Childing Agave.*] Agave with reflexed ſlightly indented leaves, and with young plants ſucceeding the flowers.

[6]AGAVE *Fœtida.*

*Stinking Childing Agave.*] Agave with narrow ſtiff entire leaves, and with young plants ſucceeding the flowers.

All the ſpecies are natives of America, the firſt three grow freely here, indulged with the ſhelter of any common green-houſe in

in winter, but the other three ſorts ſucceed beſt in a moderate ſtove during that ſeaſon.

Theſe plants in general are herbaceous, perennial, ſucculent, and evergreen, and of large and ſingular growth, conſiſting entirely of very long, erect, thick, fleſhy leaves, the ſame leaves continuing many years, and all the ſpecies have this ſingularity, they never flower but once, which is rarely till they are upward of fifty, and frequently ſixty, or near an hundred years old, when the flower ſtem is of ſuch amazing rapidity of growth, as in one ſeaſon to attain the height of twenty or thirty feet, ſupporting an enormous pyramid of flowers, continuing ſeveral months; after which ſucceeds the diſſolution of the whole plant; ſtem, leaves, and root totally periſh.

The roots of all the ſorts are thick, fleſhy, and fibrous, ſending forth innumerable ſmall fibres every way.

The plants are acaulis, having no ſtalk or trunk to elevate the leaves, they riſing immediately from the crown of the root in a vaſt cluſter, and attain conſiderable length and ſubſtance, grow erect, and embrace one another at the baſe; thoſe of the centre are cloſely enveloped from bottom to top, which, in different ſpecies, obtain different heights, from eighteen inches to ſix or eight feet, and from one to ſix or eight inches in breadth, and three or four thick, decreaſing gradually in ſubſtance to the extremity, where they terminate in a thorny point; and from between the centre leaves is produced the flower ſtem, which riſes from fifteen to twenty-five feet high; in moſt ſpecies branching out on every ſide pyramidally, and all the numerous ſhoots cloſely adorned with conſiderable cluſters of yellowiſh flowers growing erect, the whole aſſuming a beautiful pyramidal form, of a ſingularly grand appearance, continuing three or four months, and when the flowers fade, they in ſome are ſucceeded by ſeed, in others, inſtead of ſeed, by young plants, in the place of proper ſeed veſſels.

The ſeed however never comes to maturity in England, but the young plants attain it fully.

The firſt, ſecond, and third ſpecies, and varieties, obtain conſiderably the largeſt growth, their leaves often growing five or ſix feet high and upward, particularly the two former; the ſecond is diſtinguiſhable from the firſt by the leaves being of a paler green, and much narrower upward; and the third from both theſe by the leaves being broad, thinner, and the indentings on the edges more frequent and ſlight, and the armature or ſpines very black.

The *Common great Agave* and *Agave Virginiana*, have flowered frequently in many parts of England; the ſtem of the former always branches pyramidally, and that of the latter is ſimple, and ſupports its flowers entirely at its ſummit in a vaſt cluſter.

The two varieties of the *Common Agave* with ſtriped leaves are plants of ſingular beauty, and merit particular attention.

The fourth ſpecies, *Agave Rigida*, is of moderate growth, the leaves rarely exceed an inch and half in breadth, and eighteen or twenty in length, they are of ſtiff texture, the outward ones ſpreading horizontally.

The fifth and ſixth ſorts, *Agave Vivipara* and *Fœtida*, hath great ſingularity, that in the former, though the plant itſelf rarely exceeds eighteen inches or two feet, it produces a flower ſtem ten or twelve high, and in the latter, though it is ſeldom more than a yard high, the flower ſtem often attains ſix or ſeven times that height; and what is ſtill as remarkable, the flowers, inſtead of being ſucceeded by proper ſeed veſſels, are productive of young plants, hence they derive the name Childing Aloe.

Both theſe have flowered in England, and produced numbers of young plants on their flower ſtems as above, which being planted, readily grow.

Of the flowering of all theſe plants, it is the common opinion that they do not effect it until they attain the age of a century; the time of their flowering however is not limited, but depends upon the growth of the plant, which is particularly affected by heat and cold, for as the flower ſtem being produced from the centre of the leaves, and theſe cloſely embrace one another, it is evident, that until they are fully expanded, the bud of the ſtem is not at liberty to advance; and in this climate, by reaſon of cold, the growth of the plants being remarkably ſlow, it is often near an hundred years before they effect that expanſion; when the ſtem however begins to appear and advance, it makes ſurpriſing progreſs, as in the ſpace of three or four months it acquires its full ſtature.

*Propagation and Culture.*

The firſt and ſecond ſpecies and varieties are productive of abundant off-ſets or ſuckers from their baſe, by which they may be propagated with great facility. Theſe ſuckers may be taken off any time in ſummer, and planted

planted ſingly in ſmall pots of light ſandy earth; give a little water, and they will take root freely without trouble.

The third and fourth being ſparingly productive of ſuckers, they, in default of which, may be increaſed by planting pieces of their large roots in pots, and plunge them in a moderate hot-bed, they will put forth fibres in the earth, and ſhoots above, and form proper plants in three months. The fifth and ſixth ſorts are as ſparing of ſuckers as the two former, but in lieu of which they produce young plants on their lofty flower ſtems; but until they flower, thoſe cannot be obtained, their propagation therefore may alſo be tried by pieces of the root and leaves as above.

It is to be remarked, that in reſpect to ſoil, all the ſorts require a dry light ſandy earth, becauſe the plants themſelves being very ſucculent and humid, a ſoil that retained moiſture would rot the roots in winter.

With reſpect to their general culture, they muſt always be retained in pots or tubs. The firſt, ſecond, and third ſorts, and varieties, ſucceed in the full air from May until the end of October, when they ſhould be placed in the green-houſe, but the fourth, fifth, and ſixth ſorts are of the moſt proſperous growth when they have the conſtant protection of a ſtove. And it is to be particularly obſerved, that as all theſe plants are extremely ſucculent and replete with moiſture, they require very little water in winter, particularly thoſe in the green houſe; but in hot dry weather in ſummer ſhould have moderate waterings twice a week.

According as the plants advance in growth they ſhould be indulged with larger pots, but never any too large, except the great ſorts, which, when they attain a large ſize, ſhould be ſhifted into tubs for the convenience of moving them. See SHIFTING PLANTS.

It is neceſſary to ſhift all the ſorts once in two years at leaſt into freſh earth, ſee SHIFTING PLANTS.

When the plants make an effort for flowering, it is diſcoverable by the centre leaves expanding, and the bud of the future ſtem appearing, which, if it do not advance freely, it may be forwarded by artificial heat; a deep trench or pit filled with hot dung or tanner's bark, or a mixture of both, raiſing it two or three feet; into which plunge the pot or tub, containing the plant, and ſupply it with water, obſerving if the plant is at this time in any place of ſhelter, way muſt be made upward, if neceſſary, for the ſtem to advance; and if the weather is cold, it muſt not be expoſed, ſo that a temporary awning ſhould be erected to ſhield it occaſionally.

As ſome of theſe plants acquire a very conſiderable ſize, and take up much room in a green-houſe, and being troubleſome to move, a few ſhould only be cultivated to grow large.

Sometimes the great ſorts grow ſo very large and weighty before they arrive at a flowering ſtate, that the tubs containing them are obliged to be fixed upon ſtrong frames with low wheels, for the convenience of moving them out and in to the green-houſe.

The following are the other leſs common ſpecies of Agave.

[1]AGAVE *Karrata.*] Karrata Agave with long erect dark green leaves, edged with brown, and ſlightly ſawed.

[2]AGAVE *Tuberoſa.*] Tuberous rooted Agave with long narrow indented ſpinous edged leaves.

[3]AGAVE *Serrata.*] Serrated green Agave.

AGERATUM, Baſtard-Hemp Agrimony.

The plants are herbaceous, there are three or four ſpecies, one of which only claim eſteem, which is a hardy perennial, that attains three or four feet ſtature, terminated by ſnowy heads of flowers.

Claſs and order, *Syngeneſia Polygamia Æqualis.*

*Characters.*] The flower is compound. CALIX, the common cup is oblong and ſcaly. COROLLA, compoſed of ſeveral hermaphrodite tubular florets. STAMINA, five filaments with the antheræ united. PISTILLUM, an oblong germen, ſlender ſtyle, and two ſmall ſtigma. PERICARPIUM none, each germen becomes a ſeed crowned by a minute five-parted cup, placed in a naked receptacle.

The ſpecies that merit attention is,

AGERATUM *Altiſſimum.*

*Tall Canadian Ageratum.*] Ageratum with a tall ſmooth ſtalk, oval heart-formed rough leaves, and alternate flower branches.

This plant is perennial in root, but the ſtalks riſe annually in ſpring, flower in the end of ſummer, and periſh in autumn.

The roots are fibrous and ſpreading.

The ſtalk riſes four or five feet high, furniſhed upward with many ſide-branches, decorated with leaves, and terminated by large tufts of white flowers, appearing about Michaelmas, and continue three weeks, and are ſometimes ſucceeded by ripe ſeeds.

It

It is proper furniture for ſuch compartments where tall plants are required.

The propagation of this plant is by ſeed, and by parting the roots; by the latter it encreaſes conſiderably, and may be performed in autumn, or early in ſpring.

AGGREGATUS *Flos.* An Aggregate Flower.] This conſiſts of a number of ſmaller flowers or florets, collected into one head by means of ſome part common to the whole, ſuch as one common receptacle and calix or cup; that in the proper aggregate flower each ſeparate floret or fructification are erected on a ſhort foot ſtalk, ſtanding on the receptacle or baſe, which is extended in breadth for that purpoſe; and in many aggregate flowers, the florets, beſides the common calix, are each furniſhed with a proper cup.

From the different ſtructures, diſpoſition, and other circumſtances of theſe common parts, the receptacle and calix ariſes a ſevenfold diviſion of aggregate flowers, viz.

[1]The AGGREGATE Flower, properly ſo called; ſuch as ſcabious, globularia, cephalanthus, thriſt, &c.

[2]The COMPOUND Flower; ſuch as ſunflower, marigold, African marigold, milfoil, eupatorium, &c. See COMPOSITUS *Flos.*

[3]The UMBELLATE Flower; ſuch as ferula or fennel-giant, bupleurum or hare's-ear, eryngium, parſley, angelica, lovage, &c. See UMBELLATÆ.

[4]The CYMOSE Flower; ſuch as honeyſuckle, gelder-roſe, lauruſtinus, elder, &c. See CYMA.

[5]The AMENTACEOUS Flower or Catkin; ſuch as that of the pine-tree, poplar, beech, birch, walnut, cypreſs, hazel, willow, &c. See AMENTACEOUS FLOWER.

[6]The GLUMOSE Flower; ſuch as that of wheat, oats, reed, Turkey wheat, and all the graſſes. See GLUMOSE FLOWERS.

[7]The SPADICEOUS Flower, protruding their heads of flowers from a ſpatha or ſheath; ſuch as the narciſſus, amaryllis, colchicum, ſnow drop, aſphodel lily, blood flower, ſea-daffodil or pancratium, garlick, onion, leek, &c. See SPADICEUS, SPADIX, &c.

For a particular deſcription of each of the above ſpecies of aggregate flowers, ſee each in its proper place.

AGRIMONIA, Agrimony.

This genus furniſhes five herbaceous perennials, that obtain from eighteen inches to three feet ſtature; two or three proper for ornament, the others for medical purpoſes.

Claſs and order, *Dodecandria Digynia.*

*Characters.*] CALIX, one leaved, cut into five acute parts, and ſits on the germen. COROLLA, five plane petals inſerted into the calix. STAMINA, twelve filaments with double antheræ. PISTILLUM, a germen placed under the flower, ſupporting a double ſtyle. PERICARPIUM, the germen becomes two roundiſh ſeeds attached to the calix.

The ſpecies are,

[1]AGRIMONIA *Eupotaria.*

*Common officinal Agrimony.*] Agrimony with winged cauline leaves, having ſmall ſawed lobes and rough ſeed.

[2]AGRIMONIA *Repens.*

*Creeping-rooted Eaſtern Agrimony*] Agrimony with thick creeping roots, winged, cauline leaves, having narrow lobes, ſhort ſpikes, and hairy ſeeds.

[3]AGRIMONIA *Odorata.*

*Odoriferous Agrimony.*] Talleſt Agrimony with pinnated cauline leaves, having many oblong ſharply-ſawed lobes.

[4]AGRIMONIA *Agrimonoides.*

*Agrimonoides, or Three-leaved Agrimony.*] Agrimony with cauline leaves, having three lobes, and ſmooth ſeed.

The plants have fibrous roots, which are perennial, from which ariſe ſeveral branching leafy ſtalks annually in ſpring, and decay in autumn, after they have flowered and perfected ſeed.

The firſt ſort grows wild in woods and uncultivated ſhady places, but is retained ſometimes in gardens as a medicinal herb.

The ſtalks of the ſecond ſort riſe near two feet high; the third, double that height; and the fourth, near a yard; and the ſtalks of each ſort are branching, and cloſely adorned with ſmall winged leaves, and terminated by ſpikes of flowers. The third ſort is in much eſteem for the odoriferous property of its leaves and flowers. All the three ſpecies may be retained as furniture for common borders, and ſuch places where many plants of eaſy culture are required, as they ſucceed in any expoſure, and will effect an agreeable diverſity in aſſemblage.

The propagation of all the ſorts is effected by ſeed, and by parting the roots in autumn, or early in ſpring, but as they multiply exceedingly by roots, that is the moſt expeditious method.

AGROS-

AGROSTEMMA, Wild Lychnis, or Campion, Roſe Campion.

The plants are herbaceous perennials, there are three or four ſpecies, one of which produce beautiful garden flowers, the others have no merit.

Claſs and order, *Decandria Pentagynia*, ten ſtamina, five ſtyles.

*Characters.*] CALIX, monophyllous, tubular, five-parted at the brim, and permanent. COROLLA, five broad expanded petals. STAMINA, ten filaments, five of which are inſerted alternately into the baſe of the petals. PISTILLUM, an oval germen, five ſtyles, having ſingle ſtigma. PERICARPIUM, an oval capſule of one cell, having five diviſions pregnant with ſeeds.

The ſpecies and its varieties are,

AGROSTEMMA *Coronaria.*

*Coronated Agroſtemma, or Common Roſe Campion.*] Agroſtemma with ovate, ſpear-ſhaped, woolly leaves, and coronated undivided petals.

*Varieties.*] Single Roſe Campion with pale red flowers.—Single Roſe Campion with deep red flowers.—Single Roſe Campion with white flowers.—Single Roſe Campion with white and red flowers.—Double Roſe Campion with a large crimſon flower.

All the above varieties are extremely hardy fibrous-rooted perennials, that ſucceed in any common ſoil of a garden, and are of eaſy culture.

They grow eighteen inches or two feet high, the leaves are hoary and whitiſh, and riſe from the root in a great tuft, and remain all the year; and from the centre is produced the flower-ſtem annually in the ſpring, which rarely exceeds two feet ſtature, divides into many branches, all of which are terminated by the flowers in July and Auguſt, which, in the ſingle kinds, are ſucceeded by numerous ſeeds, but the double ſort produce none.

The flower of the common ſingle kinds have only five petals, but thoſe of the double ſort are numerous, even to the excluſion of the parts of fructification, ſo that they conſequently produce no ſeed.

The Double Roſe Campion is a moſt elegant flower, and the ſingle kinds, though of inferior beauty, form a pretty variety.

The ſingle kinds riſe plentifully from ſeed ſown in a bed of common earth, in ſpring or autumn; when the plants are two or three inches high, prick them into another bed or border, ſix inches diſtance, giving occaſional watering; and in autumn or ſpring following tranſplant them into the borders for flowering, which they will effect the enſuing ſummer.

As the old plants are apt to grow ſtraggling, it is proper to raiſe a ſupply of young ones every year.

They alſo riſe plentifully from ſcattered ſeeds.

The double ſort, producing no ſeed, can only be propagated by parting the roots, they generally afford plenty of off-ſets, which ſhould be parted in autumn as ſoon as the flower is paſt; plant them in a bed of common earth, ſix inches a-part, to remain until ſpring; then tranſplant them where they are to flower.

Some plants may with propriety be cultivated in pots, to adorn court-yards.

AIR. In vegetation, air, heat, and water, are its principal agents: Air abounds with vegetable ſubſtances, neceſſary to the growth and welfare of all ſeeds and plants; and it has been proved by numerous experiments, that without a certain portion of Air, no ſeeds can germinate, nor plants grow freely, nor ſeeds and fruits attain due perfection.

Air enters into the bowels of the earth to a certain depth; thence into the pores of ſeeds, roots, and veins of the very trees and herbs, carrying along with it thoſe vegetable ſubſtances contained either in itſelf, or lodged in the earth; and even enters through the bark and body of the trees, and materially effects their branches, leaves, flowers, and fruit.

The humidity of the Air alone often makes many ſorts of ſeeds riſe, and roots and plants ſhoot, that are expoſed to it; ſeeds and plants too are often obſerved to vegetate in water, without the intervention of earth; but either of theſe without Air is inſufficient. Many ſucculent plants, by the aſſiſtance of Air only, will retain their growing quality ſeveral months; and ſome ſorts of aloes will live without earth and water ſome years, if ſecured from froſt, particularly exemplified in the *Aloe Barbadenſis:* and the branches of ſome ſorts of *Sedum* and *Sempervivum,* being cut off in ſummer and expoſed to the Air, have been obſerved to emit roots without the aid of earth and water, and live ſeveral months; the *Sempervivum Arboreum* particularly furniſh examples.

Air in a certain degree is moſt neceſſary to preſerve the vegetative faculty of ſeeds, previous to their being committed to the earth;

as for example, if ſeeds are put into phials or bottles, cloſe ſtopped, and ſealed down, and retained therein ſeveral months, they, for want of air to nouriſh and preſerve health in the germ, loſe their germinating quality.

Thus, for want of a due portion of Air, ſeeds which are buried to too great a depth in the earth, either thrive but indifferently, or do not grow at all.

They frequently preſerve, however, their germinating virtue for many years in the bowels of the earth; and it is not unuſual upon a piece of ground being newly dug to a conſiderable depth, to obſerve it ſoon after covered with plants, which had not been ſeen there in the memory of man. How the vegetative property is ſo long maintained in ſeeds ſo deeply immerſed in the ground, is hard to account for; but certain it is, that there have been inſtances of ſeeds having been buried ſeveral feet deep upwards of thirty years, and when turned up again to the air, they germinated like new ſeeds; and ſoil that have been taken out of the bottom of wells, vaults, and ſewers, and ſpread in the Air, have produced many unknown weeds or plants.

It is obſervable of trees and plants, whoſe roots are planted a conſiderable depth, that being out of the reach of the proper influence of Air, ſun, and ſhowers, they do not proſper.

The ſame is alſo very obvious in plants growing in garden-frames under glaſſes, and in green-houſes and ſtoves: if they are kept too cloſe, they do not proſper; and if deprived of a proper current of Air, they draw up ſeeble, become meagre, dwindle, and die before their uſual time. Great attention ought therefore to be at all opportunities obſerved, to admit the freſh Air to plants retained in thoſe departments. Common hardy plants, that require only protection of frames from froſt in winter, ſhould be fully expoſed every mild day, by taking off the covers: thoſe of tender quality, that need artificial heat, and continual ſhelter of frames and glaſſes, ſuch as early cucumbers, melons, and tender annuals, &c. although they are unable to endure the full Air till June, ſhould be indulged with a due portion thereof every day, even in froſty weather, if there is heat in the beds; which is effected by raiſing on props one end of the lights, from half an inch to three in height, according to the temperature of the beds, and that of the outward Air. Green-houſe plants, during the winter ſeaſon, ſhould be allowed free air every mild calm day, by opening the windows leſs or more: and ſtove plants ſhould alſo have the indulgence of freſh Air in mild, ſunny, calm days; even occaſionally in winter, when the ſun ſhines warmly.

Plants in general proſper beſt where they enjoy the full Air in as great a degree as their reſpective temperaments will admit. All hardy kitchen-garden vegetables attain the greateſt perfection in a free expoſure: as for example, if peas, beans, cabbages, &c. are planted under ſpreading trees, or in any cloſe or ſhady place where they are deprived of a proper current of Air, they draw up weak without taking the proper conſiſtence, and do not attain half the perfection, neither in quantity nor quality, as thoſe that are more expoſed.

Fruit likewiſe that are produced in orchards where the trees and branches are ſo crowded as to exclude the proper circulation of Air, never attain due perfection, neither in ſize, colour, nor reliſh.

AJUGA, Bugula, or Bugle.

The plants are herbaceous perennials, of the ornamental kind, of ſtature from ſix to twelve inches, adorned at top with many flowers collected into whorled ſpikes.

Claſs and order, *Didynamia Gymnoſpermia.*

*Characters.*] CALIX is one-leaved, cut into five ſegments. COROLLA, monopetalous, tubular, and labiated, the tube long and incurved, the upper lip ſhort and bifid, the under one large, and three-parted. STAMINA, two ſhort, two long filaments, and double antheræ. PISTILLUM, four germina elevating one ſtyle, having two ſtigma. PERICARPIUM none, four ſeeds lodged in the calix.

There are ſeven or eight ſpecies, thoſe that demand notice are,

[1]AJUGA *Reptans.*

*Creeping common blue Bugle.*] Bugle with obovate crenated leaves, half embracing the ſtalk, creeping ſide ſhoots emitting roots, and blue flowers.

*Varieties.*] Common Bugle with purple flowers.—Common Bugle with white flowers.

[2]AJUGA *Decumbens.*

*Declinated Alpine Bugle.*] Bugle with oblong oval leaves, reclining ſtalks, and the whorls of flowers remote.

[3]AJUGA *Pyramidalis.*

*Pyramidal blue Bugle.*] Bugle with a ſimple ſtalk, oval bluntly indented leaves, and cloſe pyramidal blue ſpike.

*Varieties.*]

*Varieties.*] Pyramidal red Bugle.—Pyramidal white Bugle.

[4]AJUGA *Genevenſis.*

*Geneva Bugle.*] Bugle with oblong woolly leaves, hairy calix, and fleſh coloured flowers.

*Variety.*] Geneva white Bugle.

[5]AJUGA *Orientalis.*

*Eaſtern inverted white Bugle.*] Bugle with oval, indented, hairy, cloſe ſitting leaves, and inverted white flowers.

*Variety.*] Eaſtern inverted blue Bugle.

They are all of humble growth, the roots fibrous and creeping; the ſtalks riſe from ſix to twelve inches high, emitting trailing, rooting ſhoots, and decorated with ſmall, ſimple, ovate leaves below, and many ſmall flowers upward, collected into whirls round the ſtalk, in ſome forming a cloſe ſpike.

They flower early in ſummer, and yield plenty of ſeed.

The *Common Bugle* grows naturally in woods in England, the next three on the Continent, and the fifth in the Levant.

The former four ſucceed in any common ſhady border, the fifth ſhould be potted and ſhielded from froſt.

The propagation of all the ſorts is by off-ſets, or ſide ſhoots, which root in the earth, and may be ſeparated at any time, or may be raiſed from ſeed.

ALATERNUS. See RHAMNUS.

ALBUCA, Baſtard Star of Bethlehem.

This genus furniſhes two ſpecies of bulbous-rooted herbaceous perennials, of the flowery tribe, whoſe flower-ſtalks riſe from eight to fifteen inches high.

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX none. COROLLA, ſix oblong oval petals, three of which expand, and three ſtanding inward and connected. STAMINA, ſix long trigonous filaments, three of which are alternately caſtrated, the others are crowned with moveable antheræ. PISTILLUM, an oblong triangular germen and ſtyle, ſurmounted by a conic triangular ſtigma. PERICARPIUM, the germen ripens to a three-cornered capſule of three cells, containing many ſmall ſeeds.

The ſpecies are,

[1]ALBUCA *Major.*] Greateſt Canadian Albuca, with ſpear-ſhaped leaves.

[2]ALBUCA *Minor.*] Leaſt African Albuca, with narrow awl-ſhaped leaves.

Both theſe ſpecies have moderately large bulbous roots, from which the leaves and flower-ſtem riſe annually; the leaves riſe firſt, which are long and narrow, and the ſtem riſes in the centre of them, ornamented with yellowiſh flowers of the liliaceous tribe, appearing towards autumn, but rarely ripen ſeeds in England.

In the firſt ſpecies the ſtem riſes twelve or fifteen inches high, decorated with many drooping flowers, forming a looſe ſpike.

The ſecond grow eight or ten inches high, ſurmounted by a few erect flowers, forming a ſort of corymbus.

Both the ſpecies require protection from froſt, ſo the roots ſhould be retained always in pots, and placed in a frame in winter, to have occaſional ſhelter.

Their propagation is by off-ſets from the roots, when the flower is paſt in ſummer.

ALCEA, Hollyhock, or Roſe Mallow.

This genus furniſhes many curious varieties of hardy herbaceous perennials, of the flowery race, whoſe flower-ſtem obtains a lofty ſtature, adorned with numerous large and elegant roſe like flowers.

Claſs and order, *Monadelphia Polyandria.*

*Characters.*] CALIX, two monophyllous cups, the inner ſlightly five-parted, the outer ſix, and expands. COROLLA, five large expanded petals. STAMINA, numerous filaments united below, with the ſtyles like a column, and kidney-ſhaped antheræ. PISTILLUM, a round germen, a ſhort ſtyle, many-parted at top, having as many ſtigma. PERICARPIUM, the germen ripens to a round, depreſſed, jointed capſule of many cells, each containing one ſeed.

There are only two diſtinct ſpecies, but of which are many beautiful varieties, of various colours, ſuch as whites, all the tints of red and purple, and almoſt every degree of yellow, and of each variety there are ſingle and double flowers.

The ſpecies and principal varieties are,

[1]ALCEA *Roſea.*

*Common Hollyhock, or Roſe Mallow.*] Hollyhock with rounded and angularly ſinuated leaves.

*Varieties.*] Hollyhock with white flowers.—Cream coloured Hollyhock.—Fleſh coloured Hollyhock.—Red Hollyhock.—Flaming red Hollyhock.—Blackiſh red Hollyhock.—Purple Hollyhock.—Pale yellow Hollyhock.—Deep yellow Hollyhock.—Variegated Hollyhock.

[2]ALCEA *Ficifolia.*

*Fig-leaved or Palmated Hollyhock.*] Hollyhock with palmated or hand-ſhaped leaves.

*Varieties.*] Several of different colours, as thoſe of the former.

Both theſe ſpecies and reſpective varieties are hardy perennials, that proſper in any common ſoil and ſituation; they are perennial in root, but the ſtalks are annual, they riſing in ſpring attain ſix or eight feet ſtature, flower in July and Auguſt, perfect ſeeds in September, and ſoon after periſh.

The roots are fibrous, white, long, and ſpreading, but not furniſhed with many ſmall fibres.

The leaves are both radical and elevated on the ſtem, ſimple, and from three to eight or nine inches broad, the radical or root-leaves riſe in a great cluſter.

The ſtem riſes between the radical leaves, immediately from the root; is round, erect, and grows two or three yards high, ornamented on every ſide with leaves and flowers, forming a ſpike from three to five feet in length, the flowers making their firſt appearance when the ſtalk is about a yard high, and as that advances, furniſhes a daily ſupply of more new flowers, for ſix or eight weeks, which make a fine appearance.

All the varieties, both ſingle and double, afford plenty of ſeed for propagation.

The flowers in their ſingle ſtate have but five petals, but thoſe of the doubles are numerous, and the flower equal in bigneſs to the largeſt double Provence roſe; in ſome, the outer petals are large and ſpreading, thoſe within ſmall, and form a globular body in the middle.

There are different degrees of doubleneſs, with reſpect to the quantity and diſpoſition of the petals, but thoſe fully double have ſingular elegance.

*Uſe in Gardens, Culture, &c.*

All the varieties of theſe plants are very ornamental to the pleaſure ground, although they are often diſregarded by the incurious, but we know very few herbaceous plants that equal them in beauty as garden flowers for ornament, eſpecially when their tall ſtems are duly ſupported and trained in erect poſition.

The propagation of all the varieties is eaſily effected by ſeeds ſown in a bed of common earth, in March or April; the plants appear in a few weeks, and will be fit to tranſplant in autumn.

The firſt year the plants produce only radical or root-leaves; the ſecond, they ſhoot up their ſtalks and flower.

In ſowing theſe ſeeds, it is eligible, as they are pretty large, to draw flat ſhallow drills for their reception, half an inch deep, and ſix aſunder; ſow the ſeed thin and regular, rake the earth over them, and trim the ſurface ſmooth: the plants will appear in a month; and in July, when they will have ſeveral leaves, tranſplant them into a nurſery-bed, nine inches diſtance, and give occaſional waterings for a fortnight.

In October, November, or ſpring following, tranſplant them into the borders and other open compartments of the pleaſure ground, ſhrubbery, &c.

We obſerved formerly that the plants are perennial in root, but we would be underſtood, that although the ſame individual continues many years, it never flowers ſo ſtrong, nor are the flowers ſo large, double, and lively in colour as the firſt and ſecond year. Perſons that are curious ſhould therefore raiſe a ſupply annually from ſeed.

Always, if poſſible, have regard to procure ſeed ſaved from the beſt double flowers.

ALCHEMILLA, Ladies-Mantle.

This genus retains ſeveral ſpecies of hardy herbaceous perennials, ſome of which merit culture for the ſingularity of their leaves, which are curiouſly ſcalloped, waved, and plaited.

Claſs and order, *Tetrandria Monogynia.*

*Characters.*] CALIX is monophyllous, eight-parted, ſpreading at the brim, and permanent. COROLLA none. STAMINA, four filaments attached to the brim of the calix, having yellow antheræ. PISTILLUM, an oval germen, long ſtyle, and globular ſtigma, and the germen ripens to a ſingle ſeed.

The ſpecies are,

[1] ALCHEMILLA *Vulgaris.*

*Common Ladies-Mantle.*] Alchemilla with roundiſh, lobated, ſawed leaves.

[2] ALCHEMILLA *Minor.*

*Leaſt Ladies-Mantle.*] Alchemilla with roundiſh, lobated, plaited, ſharply ſawed, ſilvery leaves.

[3] ALCHEMILLA *Pentaphylla.*

*Five-leaved fimbricated Alchemilla.*] Alchemilla with five-lobed leaves, the lobes finely cut like fringes.

[4] ALCHEMILLA *Alpina.*

*Alpine digitate Alchemilla.*] Alchemilla with digitate or fingered, hoary, ſawed leaves.

All four ſpecies are hardy, fibrous-rooted, herbaceous perennials, that proſper in any common

common ſoil and expoſure, have perennial roots, but the leaves and ſtalks are renewed annually.

The leaves are the principal merit of the plants, for purpoſes of ornament in gardens; they riſe immediately from the root on long foot-ſtalks, thoſe of the firſt and ſecond are roundiſh, broad, and ſcalloped into ſeveral lobes, which are waved and plaited, hence the plants derive the name Ladies-Mantle.

The flower-ſtem riſes between the leaves, ten or fifteen inches high, very branching, having all the branches terminated by cluſters of flowers, which being apetalous, make no figure.

The *Common Alchemilla*, ſecond and third ſorts, grow wild in meadows and mountainous places, and are admitted in gardens for variety.

The propagation of all the ſpecies is by parting the roots, and by ſeed ſown in a ſhady border.

The *Alchemilla Vulgaris* is a medicinal plant.

ALETRIS, Guinea Aloe, &c.

The plants of this genus are herbaceous, ſucculent evergreens, of the aloeaceous tribe, natives of hot climates, and retained here in ſtoves for curioſity.

Claſs and order, *Hexandria Monogynia*, ſix ſtamina, one ſtyle.

*Characters.*] CALIX none. COROLLA, one oblong oval liliaceous petal, ſix-parted at the brim. STAMINA, ſix long filaments inſerted in the corolla. PISTILLUM, an oval germen, awl-ſhaped ſtyle, and trifid ſtigma. PERICARPIUM, a trigonous capſule of three cells, and angular ſeeds.

There are five or ſix ſpecies; thoſe of note are,

[1]ALETRIS *Hyacinthoides.*

*Hyacinth-flowered Guinea Aletris.*] Aletris without ſtalk, ſpear-ſhaped fleſhy leaves, and flowers proceeding by pairs.

[2]ALETRIS *Zeylanica.*

*Ceylon dwarf Aletris.*] Aletris without ſtalk, and ſpear-ſhaped, plane, erect leaves.

[3]ALETRIS *Capenſis.*

*Cape undulate Aletris.*] Aletris without ſtalk, ſpear-ſhaped undulate leaves, and oval ſpike of nodding flowers.

[4]ALETRIS *Fragrans.*

*Fragrant ſtalky Aletris.*] Aletris with an erect ſtalk, elevating a head of ſpear-ſhaped leaves, embracing it with their baſe.

Theſe plants have the appellation of aloes among gardeners, derived from their ſimilarity of growth, particularly the two firſt, i. e. Guinea Aloe, and Ceylon Aloe.

The roots of all theſe plants are thick, fleſhy, fibrous, and creeping.

The firſt three ſorts are acaulous plants, i. e. having no ſtem nor foot-ſtalk to elevate the leaves, they riſing immediately from the root, and without any viſible foot-ſtalk of their own; are narrow, ſtiff, fleſhy, and grow from ſix to eighteen inches in length, and the flower-ſtem riſes between the leaves, alſo from the root, attaining the ſame height, decorated with many bright white liliaceous flowers, of the hyacinth form, arranged in a ſort of ſpike.

In the former, the leaves and ſtem riſe a foot and half high, and produce many flowers; the ſecond riſe but ſix or eight inches, and rarely flower here; and the third attain a foot in height, and flowers annually.

The fourth ſort is furniſhed with an erect, ſucculent, jointed ſtalk, that obtains three or four feet ſtature, elevating a cluſter or head of thin reflexed leaves at top, and from their centre proceeds the flower-ſtem, ariſing two feet high, branching each way, and beautifully decorated with numerous fragrant white flowers.

All theſe plants, being exotics of delicate temperature, muſt be conſtantly kept in pots, and retained always in the ſtove.

The propagation of all the ſorts is by offſets or ſuckers, which in the two firſt ariſe plentifully from the root, in the fourth from the ſides of the ſtem, and may be taken off in ſummer, planted in ſmall pots of ſandy earth, and plunged in the bark-bed.

ALLEYS, in Gardening, Alleys are narrow paths between beds, borders, and other garden compartments, deſigned principally for the convenience of going between ſuch compartments, to do what is neceſſary to the plants, and gather their produce: Alleys are alſo ſometimes intended both for uſe and ornament in flower gardens.

In kitchen gardens, where a border is carried round next the main walks, it ſhould be divided from the quarters by a two feet Alley, for the convenience of carrying in dung and water; and the large quarters ſhould alſo be divided by one or two croſs Alleys for the ſame purpoſe.

The proper width of Alleys between beds, is from one to two feet; as, for example, Alleys between aſparagus beds ſhould be two feet wide; thoſe between ſtrawberries, a foot and

and half; and between beds of aromatic herbs, fifteen inches: but between beds of onions, leeks, carrots, parſnips, lettuce, endive, and other ſmall crops, ten or twelve inch wide Alleys is ſufficient; the ſame alſo between beds of ſeedling cabbage, ſavoys, and cellery, for the convenience of going in to draw the plants for tranſplantation.

In flower gardens, Alleys are often deſigned both for uſe and ornament. Between beds of tulips, hyacinths, ranunculas, anemonies, and other flowers that are bedded, the Alleys ſhould be eighteen inches wide; and to have them ornamental, the beds ſhould be edged with box, and the Alleys filled with the beſt high-coloured fine gravel; or in default of that, with ſand or ſhells.

ALLIUM, Garlick, Onion, and Leek, &c.

By the laws of Linnæan botany, the onion and leek are retained as ſpecies of Allium, or garlick, and we ſhall treat of them accordingly; but, for diſtinction ſake, ſhall firſt proceed with the garlick kind; then with that of the onion, *Allium Cepa*; next with the leek, *Allium Porrum*.

Claſs and order, *Hexandria Monogynia*.

*Characters.*] CALIX, is a ſpatha ſerving as a general cup, protruding many flowers. COROLLA, each is compoſed of ſix oblong erect petals. STAMINA, ſix ſubulated filaments, elevating as many oblong antheræ. PISTILLUM, a trigonous germen, ſimple ſtyle and ſtigma. PERICARPIUM, a triangular capſule of three valves, and cells pregnant with roundiſh ſeeds.

Of the garlick kind there are upwards of thirty ſpecies, but many of them being plants of no merit, we ſhall only notice thoſe proper for œconomical purpoſes, and for ornament in gardens.

The ſpecies are,

[1]ALLIUM *Sativum*.

*Common officinal Garlick.*] Allium with compound bulbs, and plane cauline leaves.

[2]ALLIUM *Scorodoprasum*.

*The Rocambole.*] Allium with plane, indented, cauline leaves, two edged vagina, and ſtalk terminated by a head of bulbs.

The above two are officinal plants.—The following are of the flowery kind.

[3]ALLIUM *Moly*.

*Common yellow Moly.*] Allium with broad, ſpear-ſhaped, radical leaves, a naked and nearly cylindrical ſtalk, and flat yellow umbels.

[4]ALLIUM *Subhirſutum*.

*Hairy white Moly of Dioſcorides.*] Allium with plane cauline leaves, hairy below, awl-ſhaped ſtamina, and white umbels.

[5]ALLIUM *Sphærocephalon*.

*Spherical-headed purple Moly.*] Allium with a taper ſtalk, half-taper cauline leaves, long three-pointed ſtamina, and round purple umbels.

[6]ALLIUM *Roſeum*.

*Roſe-coloured Montpelier Garlick.*] Allium with linear radical leaves, naked ſtalk, ſhort pedicles, oval petals, ſhort ſtamina, and roſe-coloured umbels.

[7]ALLIUM *Flavum*.

*Straw-coloured pendulous Moly.*] Allium with taper cauline leaves, oval petals, long ſtamina, and pendulous pale yellow flowers.

[8]ALLIUM *Magicum*.

*Great purple Moly.*] Allium with plane cauline leaves, ſimple ſtamina, and bulbs growing in the branches of the umbel.

[9]ALLIUM *Victorialis*.

*Victorialis, or Elliptical Garlick.*] Allium with elliptical, plane, cauline leaves, ſpear-ſhaped ſtamina longer than the corolla, and a round umbel.

All theſe ſpecies are of the bulbous rooted tribe; ſome have very large bulbs, others not bigger than peas: they are perennial in root, but annual in leaf and ſtalk.

They are all extremely hardy, will proſper in almoſt any expoſure and ſoil of a garden, and multiply exceedingly.

Moſt of the ſorts have a ſtrong ſcent like the common garlick.

The firſt ſort, *Common Garlick*, hath a large, round, white, bulbous root, compoſed of many ſmaller bulbs called cloves, each of which being planted, grow, and in one ſeaſon attain the ſize and ſtructure of the parent bulb; the leaves are cauline, or form a kind of ſtalk, which, in this ſpecies, ſeldom ſpindles, except when the ſame roots remain in the ground two or three years, when they run up and bear a flower, and ſmall bulbs at top.

This ſort merits culture in every garden for its roots for kitchen and other domeſtic uſes.

The *Rocambole* hath very ſmall bulbs, which grow in cluſters; the ſtalk generally ſpindles two or three feet high, bearing many ſmall bulbs at its ſummit, and theſe are commonly uſed inſtead of the root

With reſpect to the flowery kinds, the flower-ſtems riſe immediately from the root, grow erect, and attain different heights, from twelve to thirty inches, in ſome the leaves are radical, in others cauline, i. e. elevated with

with the ſtalk; ſome are broad like thoſe of a tulip, others long and narrow like a daffodil, and ſome taper and ruſh-like; and in all the ſorts the ſtems are terminated by a ſpatha or ſheath, from which is protruded an aggregate of many ſmall flowers, forming a ſort of umbel. The flowers ſingly are compoſed each of ſix petals, which, though ſeparately ſmall, many being collected into large heads, are very conſpicuous.

The *Allium Moly*, *Subhirſutum*, *Sphæroce-phalon*, *Roſeum*, and *Allium Flavum*, grow from twelve to fifteen or eighteen inches high, and their umbels continue a month in bloom.

The *Allium Magicum* and *Victorialis*, riſe about a yard in height, and produce large and very ornamental umbels.

They flower in May, June, and July, ripen plenty of ſeed, and in ſome many ſmall bulbs on the ſtalk and umbel.

*Propagation, &c.*

All the ſorts may be propagated with the utmoſt facility by off ſets of the root, and many of them by ſeed, and the ſmall bulbs on the ſtalk.

The Common Garlick is always propagated by the ſmall bulbs that compoſe the main root, which may readily be divided into many ſeparate cloves; theſe are to be planted in the ſpring, in beds four feet wide, in rows length ways ſix inches diſtance, four inches aſunder in each row, and two or three inches deep, planting them either with a blunt dibber, or draw drills, and place the cloves therein, and cover them with the earth.

Being thus planted, they will ſhoot up their leaves in a month or ſix weeks; and all the culture they require is occaſional ſmall hoeing to kill weeds.

In the end of July or beginning of Auguſt, the bulbs will be full grown, as will be diſcoverable by the yellow hue and withering of the leaves; then take them up, clean and dry them in the ſun, and tye or plait them in bunches to be hung up for uſe.

The Rocambole may be propagated either by the off-ſets of its roots, or by the cloves produced on the ſtalks, which ſhould be planted in autumn, by which, both the root and ſtalk bulbs will be conſiderably larger than if planted in ſpring.

Theſe are to be planted as directed for the garlick, and they will be fit for uſe in July or Auguſt.

It is however to be obſerved, the roots never acquire a large ſize.

All the flowering kinds propagate very faſt by off-ſets, which may be ſeparated any time after the decay of the flower, taking only the largeſt and plant them at once in the borders, and they will flower the following ſummer.

The propagation by ſeed is in a ſhady border in ſpring, and in autumn the plants will be fit to tranſplant.

ALLIUM-CEPA. The Onion.

We before noticed that the Onions are ſpecies of Allium, and under which genera we now range them; but to render the different ſpecies of that kind, and their culture more immediately conſpicuous and intelligible for practice, we judge it eligible to adopt this mode of ſeparate arrangement.

The characters, &c. are the ſame as the garlick already deſcribed.

The ſpecies are,

[1]ALLIUM-CEPA, *Cepa.*

*The Common Onion.*] Allium with a great bulbous root, fiſtular taper leaves, the flower-ſtalk naked, and with the lower part bellied.

*Varieties.*] Straſburg or Common oval Onion.——Spaniſh ſilver-ſkinned large flat Onion.——Spaniſh red-ſkinned large flat Onion.—Portugal great oval Onion.

[2]ALLIUM-CEPA *Major Perenne.*

*The Ciboule or Welſh Onion, or Major Perennial bulbleſs rooted Cepa.*

[3]ALLIUM-CEPA *Schænopraſum.*

*Cives, or Minor Perennial bulbleſs rooted Onion.*

[4]ALLIUM-CEPA *Aſcalonica.*

*The Eſcalot or Shallot, or Perennial bulbous Cepa*, with oblong bulbs growing in a cluſter.

The firſt ſpecies and varieties have large bulbous roots, the plants are biennial, i. e. being ſown, one year come up and arrive at perfection in the root, next year ſhoot up into ſtalk, flower, and ripen ſeed, when the ſtalks quickly die, and the individuals are at an end.

The ſecond and third ſpecies never form any bulbs at bottom, they are hardy and perennial, and may be continued many years by the roots. See their *Culture.*

The fourth ſort is bulbous rooted, perennial, and multiply exceedingly by off-ſets. Vide the *Culture.*

*Propagation and Culture; and firſt of the Common Onion.*

Of the four varieties of Common Onion, the Straſburgh is the beſt for general culture; it is a handſome bulb, generally aſſuming an oval

oval ſhape, is of firm growth, and keeps well for winter ſervice.

The Spaniſh Onions are large and flat, the white ſort is of mildeſt flavour. Both the varieties generally turn out very profitable crops, and none excells them for culinary purpoſes, but they rarely keep ſo well after Chriſtmas as the Straſburgh or oval Onion.

The Portugal Onion is a very large handſome bulb, of ſomewhat oval ſhape, although they rarely attain the ſize here as in Portugal, &c. as is obvious by thoſe imported annually from that kingdom by the orange merchants. If, however, ſeeds ſaved in Portugal are ſown here, the bulbs will arrive at a much larger ſize than from ſeeds ſaved in England, eſpecially if ſaved two or three years ſucceſſively, which will often be ſo far degenerated, that the bulbs become flat, and not larger than the common onions.

This ſort being very mild, is greatly eſteemed for ſauces, and other uſes in cookery.

All theſe ſorts are propagated by ſeed ſown annually; which, for the general crops, the proper ſeaſon is from about the twentieth of February until the latter end of March, obſerving however, in cold, wet, ſtubborn land, it is proper to defer ſowing entirely until towards the middle of the laſt named month. It is likewiſe to be remarked, that in caſes of omiſſion in ſowing at the times abovementioned, it may be performed in moiſt rich ſoils, with tolerable ſucceſs, any time before the fifteenth of April; but remembering that the crops of the February or March ſowing always bulb more freely, and acquire a much larger growth than thoſe ſown later.

The proper ſituation and ſoil for theſe crops ſhould be an open expoſure, and the land moderately light and rich; chuſing however a ſpot of the beſt mellow ground in the garden, with the addition, if poſſible, of a good coat of rotten dung, which ſhould be dug in, one ſpade deep, ſee TRENCHING, &c. obſerving to preſerve a level ſurface; and while it is freſh ſtirred let the ſeed be ſown, which is of particular importance. Do not however ſow it when the ſurface is ſo wet or moiſt as to c'og to the feet, or rake.

The proper quantity of ſeed is about an ounce to every rod or pole of ground, but if it is not required to have them thick for cullings, two ounces for three rods is ſufficient.

Be particularly careful to procure freſh ſeed; for of that which is more than one year old, not one in fifty will grow.

The ſeed may either be ſown all over the piece or plat of ground, and raked in; or the ground may firſt be divided into beds of four or five feet, allowing foot-wide alleys between; then ſow the ſeed with a regular ſpreading caſt, and immediately tread the ſurface over evenly; then pare the alleys an inch or two deep, and caſt the earth over the beds, and directly proceed to rake them length ways, keeping an even hand, and trim off all ſtones, &c. See SOWING SEED.

The ſowing them in beds is certainly the moſt eligible practice, when it is deſigned to draw or cull the young onions from time to time, for market or family ſervice, becauſe in ſuch caſes a perſon can ſtand in the alleys without treading at every turn upon the beds, which renders the ſurface hard, to the detriment of the crop, as well as unavoidably trampling upon the plants themſelves; and it is likewiſe very convenient to ſtand in the alleys to weed, thin, or hoe the crop.

It is a common practice in the general culture of onions to ſow them thick, to allow for culling or drawing out the ſuperabundant plants by degrees as they are wanted. We, however, adviſe to ſow a piece particularly for general culling, excluſive of the main crop, for by a daily thinning out the ſuperfluous plants, there is no avoiding treading upon, diſturbing, and looſening the remaining ones, and the plants thereby become of ſtinted growth.

Another very common practice is, the mixing of other crops, ſuch as leek, lettuce, radiſh, carrot, &c. with the crops in queſtion, a practice we declare againſt, as introducing confuſion in general, and obſtruction to the chief crop, without producing any conſiderable advantage; nothing therefore ſhould be admitted, except, if thought convenient, a thin ſprinkling of coſs lettuce.

In fifteen or twenty days after the ſeed is ſown, the plants will appear; and in a month or ſix weeks after that, they will be three or four inches high, and weeds will be numerous, when they ſhould be cleaned from weeds, and thinned to three or four inches diſtance. The weeding and thinning ſhould be began in due time, before the weeds branch and ſpread, which may either be performed by hand or ſmall hoeing; the latter is the moſt expeditious method, as one man may do as much as three, and is alſo the moſt beneficial to the plants, for by ſtirring the ground about them with the hoe, it will greatly facilitate

litate their growth, as will be obvious in a few days after the operation; a ſmall hoe two inches broad is the proper ſize; chuſe dry weather, cut up all weeds, and where the plants ſtand cloſe, cut them out to two or three inches diſtance; but if they are not wanted for culling, uſe a broader hoe, and cut them out to about four inches diſtance each way, having regard to leave the ſtrongeſt and moſt promiſing plants.

In a month after run over them again with the hoe, and cut up weeds, and any ſuperfluous plants that eſcaped you the firſt time; after this they will require no farther culture than pulling out ſtraggling weeds.

In July the plants will begin to ſwell greatly at bottom, and in Auguſt the bulbs will be fully grown.

Towards the middle of Auguſt, therefore, examine the crop in general; when the necks ſhrink and fall, and the leaves wither, it may be preſumed the bulbs are arrived at maturity, and are done growing, and ſhould be pulled up, cleaned, dried, and houſed for uſe: this ſhould be done in dry weather; at the ſame time hoe and rake a piece of the ground clean, and as you pull the onions, ſpread them thereon to dry and harden. Here let them lie about a fortnight, turning them every day or two, when, if the weather proves dry, they will be duly prepared for keeping, then take the firſt opportunity to houſe them before wet weather prevails. Let the bulbs be firſt diveſted of all adhering earth, looſe ſkins, and the groſſeſt parts of the leaves and neck, rejecting all infectious and bruiſed ones; and carry them into any dry upper room out of the damp, ſpreading them on the floor not more than a foot thick, but if room to lay them thinner, it will be an advantage.

Being now houſed, the cloſer the room is kept the better, obſerving to turn them over once in three weeks, and clear out ſuch as have any tendency to infection, which they would ſoon communicate to others in their neighbourhood, and it would become general.

*Obſervations.*] In the culture of onions it often happens that, through badneſs of ſeed, many are diſappointed of a crop, by waiting long in expectation of the plants riſing, till it has been too late to ſow again. In this caſe recourſe may be had to tranſplantation from other gardens, either from a neighbouring one, where there are ſuperfluous crops, or may purchaſe a bed, or ſuch part of one as is neceſſary from a market gardener; this ſhould be done in May, or early in June, and if poſſible in moiſt weather: having a ſpot of well-dunged ground prepared, take up the plants with good roots, and plant them in rows ſix inches diſtance, and four inches aſunder in each row, giving directly a hearty watering.

Repeat the waterings occaſionally for a week or fortnight, and the plants will grow freely, and you will not be diſappointed; they will form handſome bulbs.

Onions for pickling are in great requeſt. Thoſe proper for that purpoſe ſhould not be bigger than common round buttons; to procure which in due quantity, ſome ſeed ſhould be ſown late in a ſpot of light poor land; about the middle of April is the proper time: ſow it moderately thick, and the plants need not be thinned except they riſe in very thick cluſters. They will bulb in June and July, and be fit to take up in Auguſt.

Right pickling onions ſell well in the markets; thoſe that are cleaned and trimmed ready for the pickling tub fetch from eight to twelve ſhillings per buſhel.

In the ſpring many of the keeping onions will unavoidably grow as they lie in the houſe, theſe may be planted out in rows ſix inches diſtance, and will ſerve to draw up by way of eſcallions.

*Of the Autumn or Michaelmas Crop.*

This crop is generally ſown in Auguſt, and the plants ariſe before Michaelmas, ſtand the winter, and are intended principally for ſpring ſervice, to draw up young for ſallads, &c. and likewiſe, if the Straſburgh or any other variety of the Common Onion are ſown, they, if permitted to ſtand, will bulb to a tolerable ſize in June, and ſupply the kitchen or market as headed onions till thoſe of the ſpring crop are bulbed.

But as the Common Onion is liable to be cut off in ſevere winters, it is neceſſary always at the ſame time to ſow ſome beds of Welch Onions, which bid defiance to the moſt rigorous froſt. See their *Culture*.

We obſerved above, that Auguſt is the ſeaſon for ſowing theſe crops; it is to be remarked, that in warm rich land, from the fifteenth to the twenty-fifth, is the proper period; but in cold or poor ground, always ſow in the firſt or ſecond week of that month, obſerving to ſow them in beds four feet wide, with twelve inch alleys between; do not ſpare ſeed, and tread and rake it in as directed in the ſpring crop.

The plants will appear in a fortnight, and with them numerous weeds, to which early attention muſt be had to clear them out by hand before they begin to ſpread, but the plants of this crop are not now to be thinned.

In November and December however, if they ſtand very thick, ſome of the largeſt may be thinned out occaſionally for uſe.

*Of ſaving Seed of this Species.*

February is the proper time to plant onions for ſeed, though this is often done in October by thoſe that ſave great quantities for ſale.

For this purpoſe make choice of a due quantity of the largeſt and handſomeſt bulbs, rejecting all blemiſhed ones, and ſuch as have already made any effort to grow, and having made choice of a ſpot of ground well expoſed to the ſun, which being dug, proceed to plant the onions; ſtrain a line, and with a hoe or ſpade open three drills, twelve inches aſunder, and ſix deep, place the bulbs therein nine inches diſtance, and rake the earth over them; meaſure off two feet for an alley, and plant three more rows as above, and in that manner proceed to the end; the wide ſpaces of two feet is by way of alleys to go between to hoe and clear off weeds, as well as to ſtake and ſupport the ſtalks of the plants when neceſſary.

In June the flower ſtalks will be ſhot to their full height, and the flower heads will be formed at top, to ſecure which in erect poſition, drive ſome ſtout ſtakes in the ground along each row, at two yards diſtance, and from ſtake to ſtake faſten double lines of packthread, and if theſe are tied together in the intervals between the ſtems of each plant, it will effectually ſecure them.

About the latter end of Auguſt the ſeed will be ripe, which is very diſcoverable by the capſules opening, and the black colour of the ſeed; cut the heads in a dry day, and ſpread them upon cloths in the ſun, but remove them under cover at night; and in a week or fortnight beat or rub out the ſeed; clean it from the rubbiſh, and put it up in bags for uſe.

*Obſervation.*] Good onion ſeed is a very material article to be attended to: it is to be remarked that this ſeed never germinates freely after the firſt year, but notwithſtanding this, ſeeds-men are very apt to mix more than half old ſeed with their new, to the great loſs and diſappointment of many; to try its goodneſs, ſome, before they venture their general crop, ſow a little in a pot, and place it in a moderate hot-bed, or near a fire; but the moſt expeditious method is this, tye about a thimble-full of the ſeed looſely in a piece of linen rag, and put it into a veſſel of boiling water, ſuſpended by a thread; in ten or fifteen minutes pull it out, and if the ſeeds are good, they will in that ſhort ſpace of time be germinated or chipped, perhaps a quarter of an inch in length.

Leek and other ſeed of ſimilar nature may be tried by the ſame experiment.

*Culture of the ſecond Species, Ciboule, or Welch Onion.*

The *Ciboule* or *Welch Onion* is a perennial plant; this never forms any bulb at bottom, ſo merits culture only to draw as young green onions for ſallads, &c. in ſpring, but on account of its ſtrong temperament of taſte, is greatly inferior to thoſe of the Common Onion. However, as the plants being ſo extremely hardy as to ſurvive the ſevereſt winter, that although their blades are generally cut off, the roots remain ſound, and ſhoot forth with great vigour early in ſpring, and furniſh a ſeaſonable ſupply till May, when they generally run to ſeed, for which ſingular merit they demand general attention.

We noticed above of their being perennial; they are ſo in root, which encreaſe by off-ſets into great cluſters; but they are not to be propagated thereby for general uſe; their propagation is by ſeed, the ſame as the former ſorts.

Theſe are cultivated principally to ſtand the winter for ſpring ſervice. The ſeaſon for ſowing them is in Auguſt. See *Michaelmas Onions*.

The plants will appear in twelve or fifteen days, and toward Michaelmas let them be carefully hand-weeded.

It is peculiar to this ſpecies to loſe their tops in November or December, and remain diveſted thereof till towards Candlemas, when the roots ſhoot forth again; at this period it will be good culture to dig the alleys, and ſpread about an inch depth of the earth evenly over the ſurface of the beds; it will add vigour to the roots, the plants will riſe ſtrong, and all that part within the earth will be blanched white, which will be more agreeable to the eye, and the whole will be more tender and mild to eat, either alone or in ſallads.

If the ſowing of a Michaelmas crop has at any time been omitted, you may ſow ſome ſeed of this ſort toward the end of January; the plants will riſe in February, and being hardy,

hardy, will continue growing, and be fit to draw in April.

To ſave plenty of ſeed of this ſpecies, it is proper to retain ſome plants for ſtools. In the end of March put out a parcel of ſtrong young plants, nine inches diſtance, which will produce ſeed in Auguſt; let the roots remain, and in the following years will produce treble the quantity; but as they encreaſe into great bunches, the ſtools ſhould be removed and ſeparated every third year.

*Culture of the third Species, the Cives.*

This is the ſmalleſt of all the onion kind, it riſing but a few inches high; but its roots are perennial, and encreaſe conſiderably into cluſters, from which riſe large tufts of ſlender awl-ſhaped leaves, which are the only part uſed, the roots never forming any bulb, at leaſt not bigger than ſmall peas.

This little hardy plant merits a place in every garden: its cluſters of leaves riſe early in ſpring, which being of an agreeably mild temperature, is very proper as a ſallad ingredient; and the method of gathering it is to cut the leaves off near the ground, and a freſh ſupply is ſoon produced from the bottom.

It is eaſily encreaſed by dividing the roots in ſpring, and plant eight or ten together in holes ſix inches diſtance, and by autumn they will be multiplied into large bunches.

*Culture of the fourth Species, Eſcalot, or Shallot.*

This ſpecies of onion is bulbous-rooted, which encreaſe greatly by off-ſets, the largeſt of which are the proper parts of the plant for uſe.

The bulbs of this plant are oblong, irregular, and ſeldom grow large, becauſe they generally encreaſe into cluſters, that they cannot ſwell like roots that grow ſingly; from the root is produced many long, narrow, infirm leaves, coming up in ſpring, and wither in Auguſt, when the roots are full grown.

The propagation of this plant is by the ſmaller roots or off-ſets; theſe may be planted in autumn, or early in ſpring; November is the proper time for the autumn, and February for the ſpring plantation; thoſe of the former generally attain the largeſt ſize, particularly in light ſoils; they are to be planted in beds four feet wide, the off-ſets to be planted ſingly in holes ſix inches diſtance, and two or three deep.

All the culture the plants require is to be ſmall hoed occaſionally, to deſtroy weeds.

Towards the end of July, or beginning of Auguſt, the bulbs will have attained their full growth, as will be determined by the withering of the leaves; take them up in a dry day, and ſpread them in the ſun to harden, then clean and bunch the largeſt for uſe, and reſerve the ſmaller off-ſets for propagation.

ALLIUM-PORRUM, the Leek, being the third and laſt diviſion of the genus ALLIUM.

The general characters are the ſame as the Allium before deſcribed.

The ſpecies and varieties are,

ALLIUM PORRUM, *Porrum.*

*The Leek.*] Allium with an oblong tunicated root, plane cauline leaves, flowers gathered in cloſe heads, and triple-pointed ſtamina.

*Varieties.*] Broad leaved or London Leek.—Narrow leaved Leek——Striped leaved Leek.

Theſe plants may be deemed biennial; for although the roots often ſurvive after perfecting ſeeds, yet the plants always attain perfection the ſame year they are ſown, and next year they run up to ſtalk, and become unfit for uſe.

The ſeed-ſtalk of this does not belly like that of the onion.

The firſt of theſe three varieties is the ſort proper for general culture, which attains a large growth, the neck acquiring a thick ſubſtance, in length from ſix to nine or ten inches, dividing upward into many large, long, thick leaves, arranging themſelves fan faſhion.

The ſecond ſort runs up with a long thin neck, and narrow thin ſtraggling leaves, which, being a degenerate variety, do not merit culture.

The ſtriped leaved kind is retained for variety, which may be continued by ſuckers ariſing from the old roots.

*Propagation, Culture, &c.*

The Common Leek is raiſed annually from ſeed ſown in the ſpring; the proper time for ſowing the general crop for autumn and winter ſervice, is the ſame as adviſed for the onion, i. e. from the twentieth of February to the end of March; but for latter crops to ſtand for ſpring uſe, may ſow any time in April.

It is a common practice with many, out of a falſe notion of making the moſt of their ground, to ſow Leeks along with their crops of onions, which is what we would not recommend, having experienced it to be conſider-

ably the beſt culture to keep them ſeparate, though it is often practiſed by the market gardeners, when intending to cull out the onions from time to time for market, ſo that by a daily thinning they are often all cleared off by the end of July, and thoſe being gone, the ſame ground remains occupied by a crop of Leeks; but this cannot be practiſed to advantage in the main crops of onions that are to ſtand to grow to full ſize for keeping.

The beſt culture therefore we would recommend for the general crops of Leeks, is to ſow them pretty thick in a ſpot by themſelves, to be afterwards tranſplanted.

The ſame ſituation, ſoil, and method of ſowing, is to be obſerved as directed for the onion.

In June, July, and Auguſt, the plants will be of due ſize for tranſplanting: make choice of an open ſpot of the beſt ground, and if dunged it will be of much advantage, digging in the dung one ſpade deep; then draw a parcel of the largeſt Leeks, and trim their tops and the extreme parts of their fibres, and proceed to plant them by line and dibber in rows, which for the early crop ſhould be twelve inches diſtance, and eight inches a-part in each row, and for latter crops nine inches between the rows, and ſix the other way is ſufficient, putting them three or four inches in the ground, or nearly to the length of their necks, and directly let them be watered.

All the culture they require is to be kept clean from weeds, which may be done with the utmoſt facility, by applying a ſharp hoe in dry weather.

Leeks thus cultivated will be finer than thoſe that remain where ſown; their necks, which is the principal eſculent part, will be much longer, and all that part within the earth will be finely whitened, and rendered mild and tender, which is a deſirable property in the Leek.

The general ſeaſon of Leeks for uſe, is from September until May, when they ſhoot up their ſtalks for flower and ſeed.

To ſave Leek ſeed, mark a quantity of the fineſt plants, and in February tranſplant them into a ſheltered ſunny border, under a wall, pale, hedge, or reed fence; this is neceſſary, becauſe the ſeeds ripen late in autumn, and unleſs aſſiſted by ſuch ſituation and ſhelter, they do not ripen freely in England.

It would be of particular advantage to plant ſome in a row cloſe along under the fence, at ten or twelve inches diſtance in the row.

They will ſhoot up their ſtalks conſiderably in May, and in June will attain two or three feet ſtature, when they ſhould be ſupported, and continued cloſe to the fence. In July the flowers will be protruded from their ſheath at the ſummit of each ſtalk, and form a large globular head or aggregate; and in September the ſeeds will begin to ripen. When that is effected, cut the heads with part of the ſtalk, tye them in bunches by threes, and hang them acroſs lines in a dry airy apartment, two or three months, when the ſeed will be hardened, and the capſules will readily break by threſhing or rubbing, to diſcharge it from the cells.

ALOE, the *Aloe Africana*, or African Aloes.

The number of Aloes is very conſiderable, many of them of ſingular beauty and curioſity; they are univerſally perennial, ſucculent, and evergreen, chiefly natives of Africa, and conſequently require ſhelter here in winter, though the major part need only that of a green-houſe.

Former botaniſts, before Linnæus, having conjoined this genera and the Agave or American Aloe, on account of their conformity of habit, are now ranged as diſtinct genera, principally from this circumſtance, that in the former the ſeed-bud or germen is placed within the corolla; in the latter, below it. There is alſo obvious differences in the growth of the plants; in the Agave the centre leaves are cloſely infolded, incloſing the flower-ſtem, and never flower but once, and that not till they have attained a great age, then periſh, ſee AGAVE. In the Aloe the leaves are open quite to the centre, and the flower-ſtem is protruded from one ſide thereof, and the plants ſurvive and continue flowering annually.

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX none. COROLLA, one long tubular petal, ſix-parted, and ſpreading at the brim. STAMINA, ſix filaments, and ſimple antheræ. PISTILLUM, a germen placed within the corolla, a ſingle ſtyle, and trifid ſtigma. PERICARPIUM, the germen ſucceeds to an oblong capſule of three cells, furniſhed with angular ſeeds.

The ſpecies are,

1 ALOE *Mitriformes.*

*Mitre ſhaped Aloe.*] Aloe with an erect ſtem, elevating, broad, erect, ſpinous edged, converging

verging leaves, and drooping flowers, in a nearly cylindrical corymbus.

[2]ALOE *Arboreſcens.*

*Tree, or Sword Aloe.*] Aloe with an erect ſhrubby ſtem, elevating, long, narrow, reflexed, indented, ſpinous leaves, embracing the ſtem with their baſe, and pyramidal ſpike of red flowers.

[3]ALOE *Ferox.*

*Ferox, or Fierce-like Aloe.*] Aloe with a ſhrubby ſtem, ſupporting broad, dark green leaves, embracing it with their baſe, and having every ſide armed with robuſt ſpines.

[4]ALOE *Plicatilis.*

*Plaited, or Fan Aloe.*] Aloe with a ſhrubby ſtem, ſupporting heads of long, compreſſed, ſword-ſhaped, unarmed leaves, ſtanding two ways, with the edges lapping over one another, and looſe ſpikes of reddiſh flowers.

[5]ALOE *Vera.*

*True Succotorine Aloe.*] Aloe with an erect ſtem, long, narrow, ſpinous edged, ſucculent leaves, collected into diverging heads, and a long ſpike of red flowers.

[6]ALOE *Diſticha.*

*Horizontal, or Soap Aloe.*] Aloe with a ſhort ſtalk, broad, ſpotted, ſpinous edged leaves, ſpreading horizontally every way, embracing the ſtem with their baſe, and red flowers in umbels.

[7]ALOE *Variegata.*

*Variegated, or Partridge-breaſt Aloe.*] Dwarf Aloe with triangular, ſhort, thick, variegated, white and green, ſlightly-ſawed leaves, turning back at the ends, and ranged three ways; and flowers in looſe cluſters.

[8]ALOE *Linguiforme.*

*Tongue-ſhaped Aloe.*] Dwarf Aloe with ſhort tongue-ſhaped, cloſe growing, ſlightly ſpotted leaves, and drooping flowers.

*Varieties.*] Tongue Aloe with longer and deeply ſpotted leaves.—Tongue Aloe with broad, faintly ſpotted leaves, ranged cloſely together.

[9]ALOE *Verrucoſa.*

*Warted Tongue Aloe.*] Dwarf Aloe with long tongue-ſhaped leaves, concave above, and carinated below, ranged two ways, cloſely warted or ſtudded with white tubercles, and drooping red flowers.

*Varieties.*] Warted keel-ſhaped Aloe, having broad, thick, keel-ſhaped leaves, and ſpread every way.—Warted coral Aloe, having broad, ſhort, thick leaves, ſtanding two ways, and coral coloured flower-ſtalks.

[10]ALOE *Margaritifera.*

*Pearl Aloe.*] Dwarf Aloe with cluſtered, thick, ſhort, triangular-pointed leaves, the points long and turn up, cloſely covered with pearly tubercles, and flowers having two lips, the upper one erect, the under one ſpreading.

*Varieties.*] Smaller Pearl Aloe, having very ſhort leaves.—Leaſt Pearl Aloe, having extremely ſhort thick leaves.

[11]ALOE *Arachnoides.*

*Cobweb Aloe.*] Dwarf Aloe with flat growing, ſhort, plane, fleſhy, triangular-pointed leaves, the edges cloſely ſet with numerous hair-like ſpines.

*Variety.*] Cobweb Aloe, with cylindrical, baſed, triangular-pointed leaves.

[12]ALOE *Retuſa.*

*Retuſe-leaved or Cuſhion Aloe.*] Dwarf Aloe with ſhort, thick, ſwelling leaves, having triangular compreſſed ends; and trigonous flowers, having two lips, the under one rolled back.

[13]ALOE *Humilis.*

*Humble, or Hedge-hog Aloe.*] Aloe with ſhort, erect, broad-baſed, taper leaves, triangular at the ends, and both ſurfaces cloſely ſet with ſpines.

[14]ALOE *Spiralis.*

*Spiral upright Aloe.*] Aloe with a ſhort ſtem, cloſely ſet round with oval, ſharp-pointed, imbricated leaves; and oval crenated flowers, without foot-ſtalks.

*Varieties.*] Pentangular Upright Spiral Aloe, having the leaves ranged five ways.—Triangular Upright Spiral Aloe, having triangular leaves, and theſe ſtanding three ways, like a triangle.

[15]ALOE *Uvaria.*

*Flag-leaved, or Iris Uvaria Aloe.*] Aloe with very long, narrow, triangular leaves from the root; and a cluſtered ſpike of cloſe-fitting, reflexed, imbricated, yellow flowers.

All theſe plants obtain different ſtatures, from three inches to three yards, and are of various ſingular growths, producing leaves of many different ſizes, ſhapes, and determinations. Some riſe with erect ſtems, ſupporting leaves two or three feet in length at top; others are compoſed entirely of dwarf leaves, ſtanding in a cluſter on the crown of the root, of which, ſome grow flat to the earth, others grow erect, ſome ſpread every way, others range in two, three, and five different directions, and various other poſitions, that in the whole they afford a great ſource of variety.

The roots of all the ſorts are fibrous and perennial.

The

The firſt ſix ſpecies riſe with an erect ſtem, elevating the leaves; the others are chiefly of low dwarfiſh growth, with the leaves riſing immediately from the root. The ſtalks and leaves are alſo perennial, at leaſt the ſame leaves are of ſeveral years duration, and continue encreaſing in ſize, attaining, in different ſpecies, from three inches to three feet in length, and from one to ſix inches broad at the baſe, and end in a point, and thoſe of all the ſorts are thick, ſucculent, and of fleſhy ſubſtance. The flower-ſtems in all the ſorts riſe among the leaves, and attain from eighteen inches to three feet in height, the flowers ſtanding in a ſpike at the top, each flower formed of one tubular petal, the colour chiefly red, and ſome are of a white and greeniſh hue, appearing at different times, but moſtly in autumn.

All the ſorts flower annually in their native ſoil, and moſt of them do the ſame here, eſpecially if they are wintered in a ſtove.

The *Mitre Aloe* is ſo termed from the figure of its leaves; the ſtem is erect, and by degrees attain four or five feet ſtature, ſurrounded by broad, erect, dark green leaves, eighteen inches long; thoſe at top form a head, and converge towards their extremity in form of a mitre.

The *Aloe Arboreſcens*, *Aloe Ferox*, and *Aloe Plicatilis*, riſe each with a ſtrong naked ſtem, which, in many years growth, attains eight or ten feet in height, and ſupports the leaves at top, which attain two feet or more in length.

The *Succotorine Aloe* advances with an erect ſtem, gradually riſing three or four feet high, ſupporting the leaves in heads at top, grow two feet long, and diverge every way.

The *Soap Aloe* riſes with a ſhort ſtem, eighteen inches or two feet high, adorned on every ſide with horizontal leaves, of a dark green colour, ſpotted with white, ſomewhat reſembling the colour of ſoft ſoap, whence the plant derives the name.

The *Aloe Variegata*, *Aloe Linguiforme*, *Aloe Verrucoſa*, and *Aloe Margaritifera*, are plants of humble growth, have no ſtalk, the leaves ſtanding in a cluſter on the crown of the root, and growing from ſix to twelve inches high.

The *Cobweb Aloe* riſes but a few inches high, the leaves ſit cloſe to the earth.

The *Arachnoides* and *Aloe Humilis* rarely riſe more than five or ſix inches high; the leaves ſtand in a cluſter on the head of the root, and grow nearly erect.

The *Aloe Spiralis* riſes ten or twelve inches high, having a ſhort erect ſtem, cloſely ſet with ſhort thick leaves on every ſide, from bottom to top, placed one above another.

The *Aloe Uvaria* hath great ſingularity; the leaves riſe in a great cluſter from the crown of the root, very narrow, erect, and three or four feet long; the flower-ſtalk riſes in the centre a yard or more in height, ſupporting a vaſt cluſtered ſpike of yellow flowers.

This is the hardieſt of all the ſpecies, as it will ſometimes ſucceed in a warm border.

*Culture, Propagation, &c.*

All theſe plants are natives of Africa, and other warm countries, and in this climate require the ſhelter of a green-houſe, from the end of September until the beginning of June, ſo muſt always be retained in pots. It is however to be remarked, that although theſe plants may be wintered very well in a green-houſe, yet if they are indulged with the temperature of the ſtove during that ſeaſon, they more certainly produce flowers annually.

With reſpect to the general culture of all theſe plants, they may be placed in the full air from the beginning of June until the middle of September; but obſerving, if immoderate rains prevail, they ſhould have occaſional ſhelter, otherwiſe, they being very ſucculent, it would rot them. In ſummer, when the weather is hot and dry, they will need moderate watering twice a week, but in winter, in a green-houſe, once in two or three weeks is ſufficient.

The plants in general ſhould be ſhifted into freſh earth every year or two, and they will occaſionally require larger pots, either of which operations may be performed any time in ſummer. See SHIFTING PLANTS.

When any of the leaves are decayed, broken, or bruiſed, they ſhould be cut off cloſe.

The propagation of the greater part of theſe plants is effected by the off-ſets or ſuckers, which moſt of the ſorts yield abundantly; and thoſe that furniſh none may be encreaſed by cutting off their leaves, which, with the aid of a hot-bed, emit roots freely.

The time of year for either of the above methods of propagation, is from the middle of June until the end of July.

The method is as follows.

In the firſt place prepare a compoſt of light ſandy loam from a paſture, uſing the top ſpit, and almoſt an equal portion of ſea ſand; or in default of which, road ſoil; and if theſe are previouſly mixed and expoſed in the full air and ſun ſeveral months, it will be an advantage:

vantage: then, at the ſeaſon above-mentioned, ſlip off the ſuckers from the parent plant, and obſerve if their baſes are very moiſt; lay them in a dry ſhady place three or four days, till they become dry and firm; this done, get the pots, which ſhould be forty-eights, or ſixty-twos for the ſmall ſorts, and fill them with the compoſt; plant one ſucker in each pot, and directly give water, and place the pots in a green-houſe, or in a common frame, to be ſcreened occaſionally from the ſun and violent rains, and in three or four weeks they will be firmly rooted; and may then be fully expoſed, but defending them however from exceſſive wet, which is apt to rot theſe ſucculent plants.

The propagation by leaves is neceſſary for ſuch that afford no ſuckers. In June cut off ſome freſh under-leaves, and lay them on a ſhelf a few days, till their ſucculent baſes are healed over, then plant them in ſmall pots as above, and plunge them in a hot-bed, giving occaſional ſhade, water, and freſh air.

The *Aloe Uvaria*, producing plenty of ſeeds, it may be propagated thereby at pleaſure, which may be ſown in autumn in pots, and ſheltered occaſionally in a frame till ſpring, when the plants will appear; and in July plant them ſingly in pots, to be moved to ſhelter in winter; for although the plants, when they have obtained a year's growth, will ſucceed in a warm border, it is nevertheleſs proper to retain ſome in pots, to be protected from froſt.

The following are alſo of this genus.

[1]ALOE *Barbadenſis*.

*Barbadoes, or Hepatic Aloe.*] Aloe with broad, thick, erect, ſubulate, indented, ſea-green leaves, and a looſe ſpike of hanging yellow flowers.

[2]ALOE *Glauca*.

*Glaucous, or Sea-green Aloe.*] Aloe with a ſhort ſtalk, the leaves embrace it, and ſtand two ways.

*Variety.*] Short, ſpreading leaved, glaucous Aloe.

The firſt ſort requires the conſtant ſhelter of a ſtove in winter.

The ſubſtance known among druggiſts by the name of Aloes, is the inſpiſſated juice of the *Aloe Vera* and *Barbadenſis*; the fineſt is that of the Succotorine Aloe, and is greatly uſed in medicine; that of the other is commonly called *Hepatic Aloes*, and is uſed chiefly for horſes.

The above juice is drawn from the plants by expreſſion or inciſion; that of the Succotorine Aloe is yellow, bitter, and ſmells like myrrh.

ALTHÆA. Marſh-Mallow.

The plants are herbaceous perennials, of hardy growth, obtaining an annual ſtature of four or five feet, adorned on every ſide with large, roundiſh, velvety leaves, and mallow-like flowers.

Claſs and order, *Monadelphia Polyandria*, many ſtamina united in one body.

*Characters*] CALIX, two monophyllous cups, the outer one nine, and the inner five-parted at the brims. COROLLA, five heart-ſhaped petals expanding above. STAMINA, numerous filaments united in a pillar. PISTILLUM, an orbicular germen, many pointed ſtyle, and many ſtigma. PERICARPIUM, the calix becomes a round depreſſed capſule of many cells, containing kidney-ſhaped ſeeds.

The ſpecies are,

[1]ALTHÆA *Officinalis*.

*Common officinal Marſh-Mallow.*] Althæa with angulated, pointed, and ſharply indented downy leaves.

*Varieties.*] Common Marſh-Mallow with roundiſh angulated leaves.—Common Marſh-Mallow with deeply ſinuated leaves.

ALTHÆA *Cannabina*.

*Hemp-leaved Hungarian Marſh-Mallow.*] Althæa with the lower leaves palmated, thoſe above more deeply fingered.

The firſt ſpecies and varieties ſucceed in any common ſoil and expoſure; the ſecond requires a dry ſoil.

The roots of all the ſorts are fibrous and perennial, from which are produced ſtrong, erect, tall growing ſtems, which, in the common ſorts, are herbaceous and annual; in the ſecond ſomewhat woody, and of two or three years duration.

The ſtems of each ſort riſe four or five feet high, emitting ſide branches, adorned with ſimple leaves, in alternate arrangement, which, in the common ſorts, are velvety; in the other a little hairy, and from the angles of the branches and leaves proceed the flowers, which are reddiſh, compoſed each of five petals, ſhaped like thoſe of the Common Mallow, but ſmaller, appearing in June and July, and ſeeds ripen in autumn.

All the varieties of the firſt grow wild in marſhy places in many parts of Britain; the ſecond in Hungary.

The Common Marſh-Mallows are eſteemed principally as medical plants, but are alſo admitted

mitted in gardens by way of variety; the ſecond ſort is alſo retained in the gardens of the curious.

*Culture.*

All the ſorts may be propagated plentifully by ſeed ſown in the ſpring, and the common ſorts alſo by parting the roots at that ſeaſon, or rather in autumn, when the ſtems decay, obſerving, if they are to be cultivated for medical uſes, to plant them in beds fifteen or eighteen inches diſtance.

ALYSSUM, *Alyſſon*, or Madwort.

This genus retains many ſpecies, moſt of which may be deemed ſhrubby, herbaceous perennials, of the ornamental flowery kind, which attain from one to two feet ſtature, adorned with hoary leaves, and flowers in cluſters at the ends of all the branches.

Claſs and order, *Tetradynamia Siliculoſa.*

*Characters.*] CALIX is four-leaved, and deciduous. COROLLA, four petals diſpoſed like a croſs. STAMINA, two ſhort and four long filaments, having broad antheræ. PISTILLUM, an oval germen, ſingle ſtyle, and blunt ſtigma. PERICARPIUM, a round compreſſed pod, containing flat ſeeds.

There are many ſpecies, thoſe of moſt note are,

[1]ALYSSUM *Saxatile.*

*Common yellow Rock Alyſſon.*] Alyſſum with a ſhrubby branching ſtalk, ſpear-ſhaped, entire, waved, ſoft leaves; and yellow flowers in panicles.

[2]ALYSSUM *Halimifolium.*

*Sea Purſlane-leaved Alyſſon.*] Alyſſum with ſhrubby trailing ſtalks, narrow, ſpear-ſhaped, pointed, entire leaves; and white flowers in cluſters.

[3]ALYSSUM *Montanum.*

*Mountain dark yellow Alyſſon.*] Alyſſum with ſhrubby trailing ſtalks, and diffuſed branches, ſpear-ſhaped, obtuſe, hoary leaves; and dark yellow flowers in cluſters.

[4]ALYSSUM *Deltoideum.*

*Deltoid-leaved Alyſſon.*] Alyſſum with ſhrubby trailing ſtalks, lanceolate-deltoid leaves; and violet coloured flowers in looſe ſpikes.

[5]ALYSSUM *Spinoſum.*

*Prickly Alyſſon.*] Alyſſum with erect branches, armed with ſpines; and white flowers diſpoſed in cluſters.

[6]ALYSSUM *Incanum.*

*Hoary erect Alyſſon.*] Alyſſum with erect ſtalks, ſpear-ſhaped, hoary, entire leaves; and white flowers in a corymbus.

[7]ALYSSUM *Creticum.*

*Cretan yellow Alyſſon.*] Alyſſum with an erect herbaceous ſtalk; hoary, ſpear-ſhaped, entire leaves, and ſwollen ſeed pods; bright yellow flowers in cluſters.

All theſe ſpecies are natives of France, Spain, Portugal, &c. but ſucceed here in any common ſoil of a garden, where moiſture is not copious.

They have ſomewhat ſhrubby ſucculent ſtalks and branches, growing from one to two feet high, which, in the firſt ſix ſpecies, become woody and abiding; in the other, they being more herbaceous and ſucculent, ſeldom continue above two or three years: all the ſorts are adorned with hoary leaves, and flowers produced in cluſters at the end of all the ſhoots; each flower is compoſed of four croſs-ſhaped petals, which, though ſmall, being numerous on each plant, are very conſpicuous, appearing at different times in ſummer, and ſucceeded by ripe ſeed in autumn.

The *Common yellow Alyſſon* produces erect ſtalks a foot high, dividing into many low ſpreading branches, each of which is terminated by looſe ſpikes of flowers in May, and continue a month.

The *Alyſſum Halimifolium, Montanum*, and *Deltoideum*, ſpread their branches each way upon the ſurface of the earth, having every ſhoot terminated by the flowers, which, in the former, continue five or ſix months.

The *Alyſſum Spinoſum*, *Incanum*, and *Creticum*, are of erect growth, the two former attaining two feet ſtature, the latter about eighteen inches, branching out upward, adorned with cluſters of flowers, proceeding from the extremity of each branch, appearing in June, July, and Auguſt.

*Culture, Propagation, &c.*

As all theſe plants in their native climate prevail chiefly in rocky, dry, gravelly, and rubbiſhy places, the ſame ſhould be imitated here in their culture; let them therefore occupy places in dry warm borders, &c. becauſe in rich moiſt ſoils they become very ſucculent, and the froſt affects them in winter.

All the ſpecies may be propagated by ſeed, and moſt of them alſo by ſlips and cuttings of their ſhoots.

The ſeed ſhould be ſown in April, in a bed of dry light earth, and the plants will be ready for tranſplantation early in autumn. The propagation by cuttings, &c. may be effected

fected in April, May, and June, in a ſhady border, aſſiſted by occaſional waterings.

AMARANTHUS, Flower-Gentle, Love-lies-bleeding, Prince's-Feather, &c.

The number of Amaranthus is very great; they are univerſally herbaceous and annual, ſome of which are curious ornamental plants, of ſingular beauty and elegance, attaining in ſtature from three to ſeven feet; ſome grow pyramidally, others branch out tree-faſhion, &c.

Claſs and order, *Monoecia Pentandria.*

*Characters.*] CALIX, three or five coloured permanent leaves. COROLLA none, the leaves of the calix ſupply its place, and the flowers are monoecious. STAMINA, five filaments in each male flower. PISTILLUM, in each female flower an oval germen, three ſtyles, and three ſimple ſtigma. PERICARPIUM, an oval capſule of one cell and one ſeed.

The ſpecies that demand attention are,

[1]AMARANTHUS *Tricolor.*

*The Tricolor, or Three-coloured Amaranthus.*] Amaranthus with an erect ſtem; oval, ſpear-ſhaped, three-coloured leaves; and roundiſh heads of flowers embracing the ſtem.

[2]AMARANTHUS *Melancholicus.*

*Bicolor, or Two-coloured Amaranthus.*] Amaranthus with an erect ſtalk; ſpear-ſhaped, pointed, two-coloured leaves; and flowers collected in a roundiſh head, ſitting cloſe to the ſtem.

[3]AMARANTHUS *Maximus.*

*Tree Amaranthus.*] Amaranthus with an erect tree-like ſtem, branching horizontally, and large, hanging almoſt cylindrical ſpikes.

[4]AMARANTHUS *Caudatus.*

*Trailing ſpiked Amaranthus, or Loves-lies-bleeding.*] Amaranthus with an erect ſtem, branching horizontally, and very long, hanging, and trailing cylindrical ſpikes.

[5]AMARANTHUS *Sanguineus.*

*Bloody-leaved Amaranthus.*] Amaranthus with erect ſtalks and branches, oblong oval leaves, compound erect ſpikes, and the lateral ones ſpreading.

[6]AMARANTHUS *Hypocondriacus.*

*Dark purple Amaranthus, or Prince's Feather.*] Amaranthus with erect ſtalks and branches; oval pointed leaves, and cluſtered erect ſpikes.

The firſt five ſpecies are tender exotic annuals, that require to be raiſed in a hot-bed, and the ſixth is an annual of hardy growth. See their *Culture.*

Theſe plants riſe with erect ſtems, from two to ſeven feet high, riſing annually in the ſpring from ſeed; attain their full height, flowering ſtate, and general perfection, in July; continue in beauty three months, perfect ſeeds in September and October, and in November the whole individual periſhes.

The flowers of all the ſpecies are devoid of petals or flower-leaves; the leaves of the calix or cup, which are of a purple colour, and permanent, ſupply their place.

The *Amaranthus Tricolor* and *Bicolor* grow four, five, or ſix feet high, and aſſume a beautiful pyramidal growth, adorned with large and elegantly variegated leaves, which, in the former ſort, are green, yellow, and bright red; in the latter, a dark purple, and deep crimſon, very conſpicuous, and appear with great luſtre, and are the principal ornament of the plants.

The flowers of both theſe ſpecies ſit cloſe to the ſtalks in ſmall round heads, and make no appearance.

The *Tree Amaranthus* is an annual of ſtately growth, and grand appearance; it riſes with an erect ſubſtantial ſtem, ſeven feet high, at every ten or twelve inches ſending forth many horizontal branches, ornamented with luxuriant, rough, green leaves; and large, long, roundiſh, purple flower-ſpikes, proceeding from the extremity of every ſhoot, and hanging looſely downward.

The *Amaranthus Caudatus* obtains three or four feet ſtature, branching out every way horizontally, adorned with large pale green leaves, and very long, pendulous, purple ſpikes, at the joints and ends of all the branches and ſhoots, ſome in cluſters, others advance ſingly a yard in length, hanging down like a tail, and often trail on the ground, hence the plant obtained the old name, Love-lies-bleeding.

The *Bloody Amaranthus* riſes a yard high, the ſtem and branches erect, terminated by large cluſters of ſhort croſs-placed ſpikes, with an upright ſpike terminating each cluſter; and the whole plant is of a blood-purple colour.

The *Amaranthus Hypochondriacus* grows three feet high, dividing into many erect branches, adorned below with dark liver-coloured leaves, and terminated by large cluſtered, erect, purple ſpikes; this, being an old reſident in almoſt every garden we admit it in the collection for variety: it is ſo hardy, that from the ſcattered or ſelf-ſown ſeeds many plants continue riſing annually.

*Uſe in Gardens, &c.*

The firſt four ſpecies, when raiſed in their ultimate perfection, are great ornaments to

the pleaſure garden, and the *Tricolor* and *Bicolor* are the greateſt beauties of the annual tribe. Theſe two ſpecies are always cultivated in pots, and diſpoſed with cock's-combs, &c. to adorn court-yards, and other conſpicuous compartments contiguous to the main habitation, grand walks, lawns, and ornamental garden buildings. The other four ſorts are choice furniture for large open borders, and other compartments that verge principal walks, and home lawns, &c.

*Propagation.*

The propagation of all the ſpecies is by ſeed annually in the ſpring, aſſiſted by artificial heat.

The two firſt ſorts particularly require the aid of different hot-beds, and conſtant ſhelter of frames and glaſſes, until the latter end of June, otherwiſe the plants cannot be obtained of due ſtature, which, if leſs than three or four feet, they make no figure.

The general ſeaſon for ſowing theſe two ſpecies is March, but to obtain them in early perfection, and forward enough to perfect ſeeds, it is adviſeable to ſow them in the firſt or ſecond week in that month.

To raiſe theſe two curious annuals in their fulleſt luſtre, it is neceſſary to be furniſhed with new hot dung, ſufficient for two or three different hot-beds, together with as many different ſized garden frames and glaſs lights. See ANNUAL PLANTS. The firſt of theſe hot-beds ſhould be made for a one-light frame, and covered with light rich earth, four inches deep, in which ſow the ſeed, ſee ANNUAL PLANTS, and raiſe the plants an inch or two high, admitting air in the day, and cover the glaſs at night with a garden-mat; then, when the plants have obtained the above ſize, prepare a ſecond hot-bed, and prick the plants therein four inches diſtance; give moderate waterings, and occaſional ſhade from the ſun, till they have taken root, and admit freſh air daily by raiſing one end of the light, and continue the night-covering, and when the plants have grown here a month, they will meet and require more room, when a third and final hot-bed, of larger dimenſions, ſhould be made; place a frame thereon, and lay in four or five inches thickneſs of earth; then take up the plants with balls of earth about their roots, and plant each in a twenty-four ſized pot; give water, and plunge the pots immediately in the earth of the bed, managing as above; obſerving, that according as the plants reach the glaſſes, the frame muſt be as often raiſed or deepened, ſee ANNUAL PLANTS, continuing the lights always on, and tilt them at one end daily to admit air, giving water every day or two, and by the end of June the plants will have nearly attained their full ſtature, and the weather will be ſettled, when they ſhould be brought forth and placed where they are to remain, obſerving to ſupport each with a handſome ſtrait ſtake.

The plants are to be continued in the pots, and their principal culture, after being placed abroad, is to ſupply them duly with water, which they will need every day in dry hot weather.

For more particulars on their culture, ſee ANNUAL PLANTS.

To obtain good ſeed of theſe two ſorts, place ſome plants in a deep frame in September, to have occaſional ſhelter of the glaſſes from wet and cold.

The propagation of the third, fourth, and fifth ſorts, is alſo to be effected by the aid of artificial heat; the time to ſow them is towards the latter end of March, or beginning of April. Theſe three ſorts however, being hardier, do not require the aid of but one or two moderate hot-beds; that is, to be ſown and raiſed in one till they are two or three inches high, then tranſplanted into a new one, which will forward them greatly, and in which to remain until the beginning of June, then taken up with balls of earth to their roots, and planted where it is deſigned they ſhall remain to flower. Some may be planted in pots, but the principal part in the border, &c. giving water directly, and repeat it occaſionally for a week, till they have taken root.

The ſixth ſort will riſe freely in the common ground; but to obtain it in more early and greater perfection, manage it as the laſt three ſorts.

The ſeed of the laſt four ſorts ripen towards the latter end of September, when ſome of the largeſt ſpikes ſhould be gathered and ſpread in the ſun, in a dry airy room, for a fortnight.

AMARANTHUS, the Cock's-Comb. See CELOSIA.

AMARANTHUS, the Globe. See GOMPHRENA.

AMARYLLIS, Lily-Daffodil.

The plants are of the bulbous rooted tribe, and produce large liliaceous-like flowers, of extreme beauty and elegance.

Claſs

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX, a ſpatha or ſheath. COROLLA, ſix oblong ſpear-ſhaped petals STAMINA, ſix filaments, with incumbent antheræ. PISTILLUM, a round germen, ſingle ſtyle, having a trigonous ſtigma. PERICARPIUM, an oval capſule of three cells, encloſing round ſeeds.

The ſpecies of note are,

[1]AMARYLLIS *Lutea.*

*Yellow Autumnal Amaryllis.*] Amaryllis with one equal flower from each ſheath, having declinated ſtamina.

[2]AMARYLLIS *Atamuſco.*

*Atamuſco Amaryllis.*] Amaryllis with one equal flower, and declinated ſtyle.

[3]AMARYLLIS *Sarnienſis.*

*Guernſey Amaryllis, or Lily.*] Amaryllis with many flowers in each ſcabbard, having revolute petals, and erect ſtamina and ſtyle.

[4]AMARYLLIS *Regina.*

*Bella-donna Amaryllis, or Lily.*] Amaryllis with many bell-ſhaped equal flowers in each ſheath, and drooping ſtamina and ſtyle.

[5]AMARYLLIS *Bella-donna.*

*Mexican Bella-donna Amaryllis.*] Amaryllis with two or three bell-ſhaped equal flowers from each ſcabbard, and declinated ſtamina and ſtyle.

[6]AMARYLLIS *Zeylanica.*

*Ceylon Amaryllis.*] Amaryllis with a taper two-edged ſtem, many bell-ſhaped equal flowers in each ſcabbard.

[7]AMARYLLIS *Formoſiſſima.*

*Moſt handſome Amaryllis, or Jacobæan Lily.*] Amaryllis with one large, irregular, nodding flower, and the ſtamina and ſtyle drooping.

[8]AMARYLLIS *Orientalis.*

*Oriental Amaryllis, or Brunſwigia.*] Amaryllis with numerous irregular flowers in each ſheath, and tongue-ſhaped leaves.

All theſe plants produce very pretty flowers; ſome are of ſingular beauty, and merit places in every curious garden, where there are conveniences for their culture. The two firſt are hardy, the third and fourth require ſhelter from froſt; the other four need the aid of a ſtove.

*General Deſcription.*

The roots are univerſally bulbous, moſtly very large, and commonly oblong.

The flower-ſtem riſes annually from the root, in moſt ſorts naked and unattended by leaves, and attain different heights, from three inches to two feet, and at the termination or ſummit of each ſtem, is produced the flower-bud, which is a ſheath or ſcabbard, that burſts and protrudes the flower or flowers, which are large, and compoſed each of ſix oblong petals, of the liliaceous form, appearing chiefly in autumn, and when they fade the leaves come up, which are generally long and narrow, ſome large and flaggy, and which, together with the main bulbs and off-ſets, continue growing until May or June, when the leaves decay, and is the time to remove or tranſplant the roots, and ſeparate the off-ſets for propagation.

The *Yellow Autumnal Amaryllis* attains but three or four inches in height, ſeveral ſtems riſing in ſucceſſion, each ſupporting one large yellow flower, in September and October.

The *Amaryllis Atamuſco* ſends up one ſtem, ſix inches high, elevating one large beautiful flower, carnation-coloured, changing almoſt white, appearing in ſummer or autumn.

The *Guernſey Amaryllis* is one of the fineſt flowers that can be ſeen. The ſtem riſes a foot and half high, terminated by an oblong ſcabbard, from which burſts forth the cluſter of flowers; the colour a bright ſhining red, ſpangled with golden ſpecks, and a deep red vein running along the middle of all the petals. It flowers in October, and continues a month in full luſtre.

The *Amaryllis Regina* ſends up an erect firm ſtem, two feet in height, ſupporting an umbel of ſix or eight very large reddiſh purple flowers, in October.

The *Mexican Amaryllis* riſes a foot high, crowned by two, three, or four large flame-coloured flowers, in March or April.

The *Ceylon Amaryllis* demands eſteem both for its beauty and delightful fragrance. The ſtem attains two feet in height, ſurmounted by ſix or eight ſnowy white flowers, having all the petals beautifully ſtreaked with lines of purple.

The *Jacobæan Amaryllis* is a flower of ſuperior beauty, and ſingularity of form. The flower-ſtalk obtains fifteen inches ſtature, crowned by the flower, there being only one, which is very large; the colour a beautiful ſcarlet, with crimſon filaments, and yellow antheræ; the petals are irregular, and their determination is curious, three of which droop, two ſtand horizontally, and one erect; the whole nods on one ſide of the ſtalk. The plant flowers in ſpring, autumn, or winter; and it is peculiar to the ſpecies, that after having ſent up a flower-ſtem on one ſide of the bulb, it frequently ſends up one or two

more, in ſucceſſive order, from the other ſides.

The *Oriental Amaryllis* ſends up a robuſt ſtem a foot high, terminated by a large ſwelling ſcabbard, which protrudes a conſiderable ſpherical cluſter of fine red flowers, each of which have five of its petals turned inward, and the ſixth ſtands outward. It flowers late in autumn.

*Culture, Propagation, &c.*

The bulbs of all theſe plants may be purchaſed at moſt of the nurſeries, and planted in Auguſt and September.

The two firſt ſorts may be planted in any dry warm border, eſpecially the firſt, where they will flower annually; the other being ſomewhat impatient of ſevere froſt, it is alſo neceſſary to plant ſome in pots, to have occaſional ſhelter in winter.

The *Guernſey Lily* requires protection from exceſſive wet and froſt, ſo ſhould be planted in pots to be moved to occaſional ſhelter during their bloom, and from the rigour of winter.

Great numbers of theſe bulbs are imported hither annually from the Iſle of Guernſey, for ſale; they generally arrive in July, which if procured and planted before the middle of Auguſt, ſome of the large roots will probably flower the following October. The proper ſized pots wherein to plant theſe bulbs are twenty-fours, which fill with rich, light, ſandy earth, plant one root in each pot three inches deep, and place the pots where they may be ſcreened from the mid-day ſun during the hot weather, giving occaſional moderate waterings, and about the middle of September, when the flower-bud will begin to make its appearance, remove them to the full ſun, to remain till their flowers begin to expand, then place them to have occaſional protection from rains and boiſterous winds, either in a green-houſe, garden-frame, or any airy room.

When the flower fades, remove them into a garden-frame for the winter, to have occaſional ſhelter of the glaſſes in times of violent rain, froſt, ſnow, &c.

As it is peculiar to this ſpecies to flower ſomewhat reluctantly, inaſmuch, that probably not five roots in twenty will perform that office the ſame ſeaſon; therefore, permit the bulbs to remain unremoved three years, managing them as above, and they will afford a more conſiderable bloom the ſucceeding autumns. It is however always eligible culture to tranſplant the bulbs once in the above period into freſh earth, and ſeparate the off-ſets, which plant either in pots, or in a bed of light dry ſoil, giving occaſional ſhelter in winter, and in three years they will attain a flowering ſtate, when they are to be treated as already directed.

The *Bella-Donna Amaryllis* is tolerably hardy, and will ſucceed in a warm dry border, with occaſional ſhelter from froſt. It is however adviſeable to plant ſome alſo in pots, and manage them as directed for the Guernſey Lily. If it is indulged with a ſtove, it generally flowers with greater luſtre.

The *Mexican*, *Ceylon*, *Jacobæan*, and *Oriental Amaryllis*, are of tender temperature, which, though they may be preſerved through the winter in a warm green houſe, they rarely flower, unleſs the pots are plunged in a good hot-bed, under frames and glaſſes, towards the time of their reſpective ſeaſons of flowering. All theſe ſorts, however, ſucceed beſt in a ſtove, and where there are ſuch conveniences, it is eligible culture to indulge the plants with that temperament of heat, when they will not fail to produce their beautiful flowers annually, and the Jacobæan Amaryllis often two or three times in that period of time.

All the ſorts are propagated by the off-ſets, or ſmaller bulbs, that ariſe annually from the ſides of the main roots, which ſhould be tranſplanted when their leaves decay, and the off-ſets ſeparated for propagation, and planted by themſelves, and in two or three years they will attain a due ſize for flowering, when they are to be managed as above directed.

AMBROSIA.

The plants are chiefly herbaceous. There are ſix ſpecies, of which two only merit conſideration.

Claſs and order, *Monoecia Pentandria.*

*Characters.*] CALIX, a monophyllous common cup. COROLLA, many male monopetalous florets in the ſame calix, and female apetalous flowers in different cups. STAMINA, five filaments in each male floret. PISTILLUM, in each female flower a germen, and ſtyle having two long ſtigma. PERICARPIUM, a leafy capſule of one cell, and one ſeed.

The ſpecies of moſt note are,

[1]AMBROSIA *Elatior.*

*Taller, Mugwort-leaved, Annual Ambroſia.*] Ambroſia with doubly-pinnatifid leaves, and branches terminated by paniculated ſpikes.

[2]AMBROSIA

1 AMBROSIA *Arboreſcens.*

*Tree-like Peruvian Ambroſia.*] Ambroſia with a ſhrubby perennial ſtem, pinnatifid, winged-like, hairy leaves, and the branches terminated by ſimple ſpikes.

The firſt ſort is a hardy annual, that obtains three or four feet ſtature, and is of branching growth, producing cluſtered ſpikes at the end of every branch.

The *Tree Ambroſia* is a ſhrubby perennial, which grows eight or ten feet high, branching out upwards; the whole becomes woody, and of ſeveral years duration, and flowers annually; the flowers collected in ſimple ſpikes, proceeding from the end of all the branches.

The ſpikes in both ſorts are amentaceous, and ſupport both male and female flowers.

Both theſe ſpecies are exotics; the firſt is of Virginia, &c. and the ſecond comes from Peru. The former ſucceeds in the common ground, and may be admitted in the collection of hardy annuals, in decorating the flower-borders; and the ſecond is tender, ſo muſt be potted and placed among the green-houſe exotics.

Their propagation may be effected by ſeed in a moderate hot-bed or warm border, in March; and the Tree Ambroſia may alſo be raiſed with great facility by cuttings, which grow freely in a ſhady border in May or June.

AMENTACEOUS FLOWERS, from *Amentum*, having that ſpecies of calix or cup called *Amentum*. All Amentaceous Flowers are aggregate, and conſiſt of a great number of minute flowers, and ſquamæ or chaffy ſcales, mixed alternately, and diſperſed along a ſlender thread-like receptacle, which hang looſely down like a tail, and from the reſemblance of ſome ſorts to a cat's tail, has obtained the name of catkin. See AMENTUM.

The following genera are of the Amentaceous kind.

Birch, beech, hazel, horn-beam, walnut, oak; pine, poplar, juniper, cypreſs, arbor-vitæ, willow, &c.

AMENTUM, Catkin; defined to be a compoſition of ſcaly calix and flowers, diſpoſed along a thread-like receptacle. The ſquamæ or ſcales that form the Amentum, mix alternately with the flowers, and reſemble the chaff in an ear of corn.

AMOMUM, Ginger.

The plants are herbaceous exotics, of the Eaſt and Weſt Indies, and are cultivated here in ſtoves for curioſity.

Claſs and order, *Monandria Monogynia.*

*Characters.*] CALIX is indented into three parts. COROLLA is monopetalous, tubular, and three-parted at the brim, and a nectarium in its boſom. STAMINA, one filament, and thick antheræ. PISTILLUM, a round germen under the receptacle, a ſingle ſtyle, having a hairy ſtigma. PERICARPIUM, a trigonous capſule, having ſeveral ſeeds.

The ſpecies are four, thoſe that merit notice are,

1 AMOMUM *Zinziber.*

*Common Ginger.*] Amomum with naked flower-ſtems, and an oval ſpike of flowers.

A 2 MOMUM *Zerumbet.*

*Zerumbet, or Broad-leaved wild Ginger.*] Amomum with naked flower-ſtems, and oblong blunt ſpikes.

The plants grow three or four feet high, are perennial in root, but the ſtalks and leaves riſe in ſpring, and periſh in autumn.

The roots are thick, fleſhy, jointed, and ſpread each way in the earth.

The ſtalks are reed-like, and grow erect; thoſe of the firſt riſe two feet and half high, the ſecond above a yard; many ſuch ſtalks often proceed from the ſame root, ornamented with leaves placed alternate, their baſes embracing the ſtalks; thoſe of the firſt are long and narrow, and in the ſecond they are oblong and broader. From one ſide of the ſtalks ariſe the flower-ſtems immediately from the root, each terminated by the flowers, which are arranged in cloſe, ſcaly ſpikes; thoſe of the Ginger are blue, the other white.

Both ſorts flower in autumn, and in November the whole decays to the ground.

The dried roots of the firſt ſpecies is that well known aromatic called Ginger, being much uſed for kitchen and medical purpoſes.

Their propagation is effected by parting the roots early in ſpring, before they ſhoot forth new ſtalks, planting the off-ſets in pots of light rich earth, and plunging them in the bark-bed in the ſtove, giving occaſional waterings, which, after they begin to ſhoot, they will need twice a week.

AMORPHA, Baſtard Indigo.

There is but one ſpecies, which is a hardy, deciduous, flowering ſhrub, of tall growth, with long winged leaves, and butterfly-ſhaped flowers.

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX is monophyllous, tubuloſe, and five-parted at the margin. Co-

ROLLA

ROLLA is papilionaceous, but the wings and keel are wanting. STAMINA, ten filaments connected at their base, and simple antheræ. PISTILLUM, a roundish germen, single style, and stigma. PERICARPIUM, a moon-shaped leguminose pod, containing two kidney-shaped seeds.

The species is,

AMORPHA *Fruticosa.*

*Shrub Amorpha.*] Amorpha with false acacia leaves, and purple flowers.

This shrub rises ten or twelve feet high, advancing generally with several stems, which branch out irregularly, and produce large soft shoots, ornamented with long winged leaves, composed of many pair of lobes, and numerous small papilionaceous, dark purple flowers, in long spikes, proceeding from the extremity of the young shoots in summer, but it rarely ripens seed in this country.

It is a native of America, where, of its young shoots, was formerly prepared an inferior sort of Indigo.

For uses in gardening, this shrub may be employed to good advantage in composing large shrubberies.

The propagation of this plant is by seed, and layers of the young branches. The seed is procured from America, and sown in a bed of common earth in spring; the laying may be performed in that season, or in autumn, and by autumn following the layers will be fit to transplant.

AMYGDALUS, The Almond-Tree, which comprehends also the Peach and Nectarine.

According to the Linnæan system of botany, all the sorts of Peaches and Nectarines are retained as species of *Amygdalus*, under which genus we shall also range them; but to render the whole more intelligible for common practice in their cultivation, shall proceed in three divisions, the first division to contain those commonly considered as Almonds; second, the Peach-Tree, *Amygdalus-Persica*; and third, the Nectarine, *Amygdalus-Nucipersica*.

Class and order, *Icosandria Monogynia.*

*Characters.*] CALIX is monophyllous, tubular, and obtusely five-parted above. COROLLA, five oval concave petals inserted into the cup. STAMINA, twenty, or more filaments, and as many antheræ. PISTILLUM, a roundish germen, simple style, having a round stigma. PERICARPIUM, the germen becomes a large oval downy pulpy fruit, enclosing a hard nut or stone, containing one seed or kernel.

*First Division.*

Of the Almond kind, the following are the principal species and varieties.

[1]AMYGDALUS *Communis.*

*Common Almond Tree.*[ Almond-Tree with foot-stalked, sawed leaves, and reddish flowers, in pairs, having the petals emarginated.

*Varieties of this are,*] Common Almond with bitter kernels.—Common Almond with a tender shell, and bitter kernels.—Common Almond with sweet kernels.

The following are also supposed to be only varieties of the Common Almond.

[2]AMYGDALUS *Sativa.*

*Manured, or White flowered Almond-Tree.*] Almond-Tree with linear-lanceolate, sharp-pointed, crenated leaves, and white flowers.

[3]AMYGDALUS *Dulcis.*

*Sweet, Tender-shelled, Jordan Almond.*] Almond-Tree with petiolate, short, broad, crenated leaves, and pale red flowers no longer than the calix.

[4]AMYGDALUS *Orientalis.*

*Eastern Silvery-leaved Almond.*] Almond-Tree with spear-shaped, silvery, short, foot-stalked leaves, continuing great part of the year.

[5]AMYGDALUS *Nana.*

*Dwarf Almond.*] Almond with low slender stems and branches, and petiolate leaves, narrowed at the base, and sawed on the margin.

*Varieties of this are,*] Dwarf Almond with single red flowers.—Dwarf Almond with double red flowers.

All these species and respective varieties are deciduous, and of hardy temperature, that prosper in any common soil of a garden. They are considered principally as plants of ornament, for the beauty of their early flowers, which surround all the young branches and shoots in great numbers, and are extremely conspicuous; they come out before the leaves, composed each of five small petals, and are universally hermaphrodite, appearing early in spring, and which, in the *Amygdalus Communis*, and *Sativus*, are frequently succeeded by plenty of ripe fruit in autumn, which, in all the varieties, obtains an oval form, and large size, is downy, and has a thick tough pulp, enclosing a large oblong nut or stone, containing a large kernel, which is the Almond, and the only esculent part of the fruit, many of which are extremely sweet and palatable.

The

The tree kinds flower early in March, and the fruit ripens in September; and the dwarf ſorts flower the end of March, and beginning of April.

The *Amygdalus Communis* and varieties obtain about fifteen or twenty feet in height, and divides low into many ſpreading branches, which ſhoot ſtrongly, but in time forms regular ſpreading heads, adorned in ſpring with innumerable flowers, ariſing cloſely all along the ſides of the young branches and ſhoots, and in a manner covers them, continuing a fortnight or three weeks in full luſtre, and make a fine appearance; and when they fade, the leaves, which are long and narrow, come out, and the fruit take their growth.

The ſeveral varieties of this ſpecies are frequently obtained from the ſeed or kernels of the ſame tree, of either ſort; that with the ſweet kernels is often cultivated as a fruit-tree, for the ſake of the ſaid kernels, and when once obtained, the ſort is continued with certainty by inoculation. See their *Culture*.

The *Amygdalus Sativa* attains twelve or fifteen feet in height, is a moderate ſhooter, and the flowers ſmall; but being white, numerous, and tolerably conſpicuous, they form an agreeable contraſt with the common ſorts; but the bloſſoms being impatient of cutting froſts, they are rarely ſucceeded by much fruit, unleſs the trees have a ſheltered ſituation, or are trained againſt a ſouth wall.

The *Amygdalus Dulcis*, and *Orientalis*, riſe twelve or fifteen feet high, they ſhoot moderately, and produce very ſmall flowers, but rarely any fruit in England.

The two varieties of Dwarf Almond are low ſhrubs, that ſeldom exceed three or four feet in height; the ſtems are ſlender, and ſend forth numerous feeble branches near the ground, and the ſingle flowered ſort ſend up many ſuckers from the root. Both theſe ſhrubs have all their young branches cloſely adorned in ſpring with flowers, which, being of a fine pale red colour, very numerous, and ſhowy, make a beautiful appearance for about a fortnight, and are ſome of the greateſt ornaments of the ſpring.

The ſingle ſort flowers the end of March, and the double kind early in April, each continuing about a fortnight.

*Uſe in Gardens, &c.*

For uſes in gardening, theſe trees are eſteemed chiefly for the beauty of their flowers; but ſome of the tree kinds alſo demand attention as fruit-trees, and being of moderate growth, they may with propriety be admitted in gardens of any extent.

Thoſe that have the greateſt claim to eſteem, are the Common Almond, White flowering Almond, and the two varieties of the *Amygdalus Nana*. Of the two former, a few ſtandard trees diſpoſed alternately in ſhrubberies, or any ornamental plantation, have a fine effect in the ſpring ſeaſon, and are particularly ornamental on the boundaries of graſs lawns, contiguous to the manſion-houſe. Some trees dropped ſingly in different parts of large pleaſure grounds, will appear to great advantage during their bloom; and after the flower is paſt, the progreſs of the growth of the fruit of the two former ſorts affords amuſement to the curious.

Sometimes curious perſons train a few of the Common and White Almond, as dwarfs, or half ſtandards, againſt walls, or in eſpaliers, to obtain larger, forwarder, and better flavoured fruit, managing them as peach-trees.

The two ſorts of Dwarf Almonds, being ſhrubs of great beauty during their bloom, are proper furniture for the moſt conſpicuous compartments of ſhrubberies, and ſhould occupy places near the front, with ſhrubs of loweſt growth.

The other two ſpecies are alſo cultivated in ſome curious gardens for variety, eſpecially the Jordan Almond.

*Propagation, &c.*

The Common Almond and varieties may be propagated either by ſowing the ſtones of the fruit, or by budding them upon plumb, or almond ſtocks.

With reſpect to theſe two methods of propagation, thoſe that are budded ſooner form full and regular heads, and they likewiſe ſooner attain a ſtate of flowering and producing fruit; and beſides, if it is intended to continue the Sweet Kernelled, or any other particular ſort, it can only be done with certainty by inoculation; as when raiſed from ſeed they vary, and all the varieties often riſe from the fruit of the ſame tree. The inoculation is performed in July, in the uſual method, and may be budded either for dwarfs, half or full ſtandards; ſee INOCULATION. The firſt ſhoot from the bud is to be ſhortened in ſpring to four or five eyes, that it may put out lateral ſhoots to form a regular head, and in two or three years after they may be tranſplanted, either for bearing fruit, or for the purpoſes of ornament.

The

The ſecond, third, and fourth ſorts are alſo commonly propagated by inoculation, managing them as above.

To raiſe theſe trees from the ſtones, they ſhould be planted in autumn, i. e. October or November; chuſe thoſe of the ſame year's growth, and drill them in three inches deep, in a bed of light earth, the plants will appear in ſpring, and in autumn or ſpring following, tranſplant them in rows in the nurſery, where you may train them either for ſtandards, half ſtandards, or dwarfs, according to your fancy. See STANDARDS and DWARF-TREES.

If it is intended to bud any of them, either with Almonds or Peaches, they will be fit for that operation for dwarfs, ſome the firſt, and all of them the ſecond ſummer after tranſplanting; but for ſtandards they ſhould have three years growth, to be trained with proper ſtems. See INOCULATION and GRAFTING.

The two dwarf ſorts are alſo ſometimes propagated by budding upon plumb or Almond ſtocks; they may alſo be raiſed with great facility by ſuckers from the roots, which the ſingle kind particularly yield in great plenty; or, in default of which, both ſorts may alſo be raiſed expeditiouſly by layers.

*Second Diviſion.*

AMYGDALUS-PERSICA, the Peach-Tree, being the ſecond diviſion of the genus *Amygdalus*. See AMYGDALUS.

Claſs, order, and characters, the ſame as the Amygdalus.

The varieties of Peaches are very great, and by continuing to raiſe them from the ſeed or kernel, they may be multiplied indefinitely. It is to be obſerved, however, that notwithſtanding the number of varieties that may be obtained that way, it is probable not one in twenty is poſſeſſed of the proper qualities, as is obvious by the cultivated ſorts now known in England; for moſt of the eminent nurſery-men retain no more than from twenty to thirty ſorts in their catalogues, which they ſell as real good peaches. Some indeed extend them to forty or fifty, but among which there are many of very indifferent qualities, and not worth the ſpace they occupy; and ſince it is not more expence to cultivate the beſt than the more indifferent ones, the firſt only deſerve our regard; and as all the ſorts require to be trained againſt walls, the expence of building them is very conſiderable, and a good aſpected wall is too valuable to be filled with any but the capital ſorts. See WALLS, &c.

Theſe fruit are divided into two claſſes, i. e. Peaches and Pavies; the former are diſtinguiſhable by the fleſh or pulp readily quitting the ſtone, that of the latter firmly adheres thereto.

Botaniſts allow only one diſtinct ſpecies of Peach-Trees, all the different ſorts of fruit are varieties of one another, ſo that the trees of all the varieties bear the particular marks of the original ſpecies; which is,

AMYGDALUS-PERSICA, *Perſica.*

*The Peach-Tree.*] Amygdalus with ſawed leaves, and ſolitary flowers, ſitting cloſe to the ſides of the branches.

Varieties of the fruit are,

[1]*Early White Nutmeg Peach.*] A very ſmall oblong whitiſh fruit; ripe middle of July.

[2]*Early Red Nutmeg Peach.*] A ſmall, roundiſh, bright red fruit; ripe end of July.

[3]*Anne Peach.*] A ſmall, round, yellowiſh white fruit, faintly tinged with red on the ſunny ſide; ripe early in Auguſt.

[4]*Small Mignon Peach.*] A ſmalliſh round fruit, red on the ſunny ſide; ripe towards the middle of Auguſt.

[5]*Great Mignon Peach.*] A large round fruit, ſwelling on one ſide, and beautifully ſpotted with red next the ſun; ripe about the middle of Auguſt.

[6]*Early Purple Peach.*] A large, round, purpliſh red fruit; ripe middle of Auguſt.

[7]*Late Purple Peach.*] A fine large, round, dark red, or purple fruit; ripe middle of September.

[8]*White Magdalen Peach.*] A middle ſized, round, whitiſh fruit, one ſide deeply furrowed; ripe early in Auguſt.

[9]*Red Magdalen Peach.*] A beautiful large, round, red fruit; ripe end of Auguſt.

[10]*Early Newington Peach.*] A middle-ſized roundiſh fruit, elegantly red on the ſunny ſide; ripe in Auguſt.

[11]*Old late Newington Peach.*] A fine large round fruit, beautifully red next the ſun; ripe middle of September.

[12]*Montauban Peach.*] A middle-ſized roundiſh fruit, cleft on one ſide, and almoſt wholly of a purple-red colour; ripe towards the end of Auguſt.

[13]*Belle Chevreuſe Peach.*] A middle-ſized beautiful red fruit, of an oblong figure; ripe end of Auguſt.

[14]*Nobleſſe Peach.*] A very large roundiſh fruit, finely marbled with a purpliſh red; ripe beginning of September.

[15]*Yellow Alberge Peach.*] A middle-ſized, ſome-

ſomewhat longiſh, yellow-fleſhed fruit; ripe about the middle of Auguſt.

[16]*Belle Garde Peach.*] A fine, large, roundiſh fruit, almoſt wholly of a deep purple colour; ripe beginning of September.

[17]*Chancellor Peach.*] A large, ſomewhat oblong, bright red fruit; ripe end of Auguſt and September.

[18]*La Teton de Venus, or Breaſt of Venus Peach.*] A pretty large, ſomewhat longiſh fruit, deeply divided on one ſide, both diviſions ſwelling and rounded like a woman's breaſt, and of a pale red colour on the ſunny ſide; ripe towards the end of September.

[19]*Roſſana Peach.*] A middle-ſized, ſomewhat oval fruit, purple next the ſun; ripe early in September.

[20]*Perſique Peach.*] A fine large, roundiſh, and ſomewhat oblong fruit, terminated at top by a ſmall nipple, having the ſunny ſide red, the other pale green; ripe early in October.

[21]*Admirable Peach.*] A very large, round fruit, beautifully adorned with red next the ſun; ripe beginning or middle of September.

[22]*Rambouillet Peach.*] A large, longiſh, deeply-furrowed fruit, the ſunny ſide beautifully reddened, the other yellow; ripe towards the end of September.

[23]*La Royale, or Royal Peach.*] A large, round, almoſt wholly red fruit, but deeply reddened next the ſun; ripe end of September.

[24]*Bourdine Peach.*] A large, round, very fine fruit, bright red on the ſunny ſide; ripe beginning or middle of September.

[25]*Bloody Peach.*] A middle-ſized, deep red fruit next the ſun, and its whole pulp of a blood red colour; ripens late in October.

[26]*Nivette Peach.*] A very fine, large, longiſh, deep purple fruit next the ſun; ripe middle of September.

[27]*Portugal Peach.*] A large, round, even Peach, generally ſpotted, and the ſunny ſide elegantly reddened; ripe towards the end of September.

[28]*Royal George Peach.*] A middle-ſized, round Peach, furrowed on one ſide, of a deep red next the ſun, the other part white, ſpotted with red; ripe early in September.

[29]*Violet Peach.*] A middle-ſized, roundiſh, oval, violet-coloured Peach; ripe towards the middle of September.

[30]*Catharine Peach.*] A beautiful, very large, round Peach, the ſunny ſide wholly of a fine bright red, the other ſide white; ripens in October.

[31]*Monſtrous Pavie of Pomponne.*] An amazingly large and beautiful Peach, the ſhape round, and often meaſures twelve or fourteen inches in circumference; the ſide next the ſun is deeply reddened, and the other aſſumes a pale fleſh colour; ripe about the end of October.

[32]*Cambray Peach.*] A middle-ſized, longiſh, pale-coloured Peach; ripe in October.

[33]*Sion Peach.*] A large, handſome, round Peach, reddiſh on the ſunny ſide, the other ſide whitiſh; ripe end of September.

[34]*Narbonne Peach.*] A very large Peach, almoſt wholly of a greeniſh colour; ripe in October.

The above thirty-four varieties of Peaches are the principal ſorts of that univerſally admired fruit, known in Great Britain; and the name here annexed to each variety, is that by which they are generally known to all the nurſerymen, who cultivate the trees for ſale, to ſupply noblemen and gentlemen's gardens.

Many of the above varieties approach ſo near to one another in ſize, ſhape, and colour, that it is ſometimes difficult to determine their difference without the ſtricteſt attention.

We do not pretend to recommend all theſe varieties as real good Peaches, but for the ſake of thoſe who have large extent of walling, have collected all the principal ſorts to view, with ſhort deſcriptions of their ſizes, ſhapes, colours, and times of ripening, which it is preſumed will convey ſome idea of the reſpective varieties to the unexperienced, and help to direct him in the choice of the ſorts.

The ſorts that have the greateſt claim to eſteem, as the beſt and moſt beautiful, both in regard to ſize, ſhape, colour, flavour, and the beſt bearers, are the following.

The Anne Peach, Small Mignon, Great Mignon, Red Magdalen, Belle Garde, Belle Chevreuſe, Montauban, Admirable, Early Newington, Late Newington, Bourdine, Nivette, La Royale, Purple, Teton de Venus, Catharine, and Great Pavie of Pomponne; the latter chiefly for its prodigious ſize and beauty, and, as a pickle, it ſurpaſſes all the other ſorts.

The two Nutmeg Peaches, though of ſmall ſize and indifferent flavour, eſpecially the white ſort, they, on account of their early perfection, ſhould alſo be allowed a place in the collection.

The Bloody Peach merits a place more for ſingularity, than for the quality of the fruit.

The two Newington Peaches, Portugal, Catharine, and Monſtrous Pavie, may be deemed of the Pavie tribe, their fleſh adhering cloſely to the ſtone. The Old Newington and Catharine are eſteemed two of the moſt valuable Peaches that are cultivated in England.

Peach trees in general will grow fifteen or twenty feet high, if they have full ſcope; and if trained for ſtandards, and permitted to take their natural growth, they form regular heads, but they do not ripen their fruit well on ſtandards in this country, they being natives of a much warmer climate; ſo that, to effect the ripening of their fruit perfectly, they require the ſhelter of a warm wall, to which their branches ſhould be regularly trained.

The trees in general flower early in ſpring; the flowers come out before the leaves, appearing chiefly on the ſhoots of laſt year, ariſing ſome ſingly, others in pairs, all along the ſides of the ſhoot, to which they ſit cloſe; they are formed each of five ſmall petals, and many ſtamina in the middle, with a ſmall round germen, which becomes the Peach.

*Of their Propagation.*

The general propagation of Peach-trees is effected by budding them upon plum ſtocks.

But all the fine varieties of theſe fruit were originally obtained from the ſeed or kernel, and more new varieties may be gained by that means; but as we formerly obſerved the proceſs is ſomewhat tedious, and often terminates in but trifling ſucceſs, in reſpect to the quality of the fruit ſo obtained; for if you plant the ſtones of the fineſt ſorts, it is a thouſand to one, if, out of a great number, you obtain one like the originals, and but few that have any real merit, ſo greatly do theſe, and indeed all other fruits, vary from the ſeed. However, for the ſake of experiment, there are many who have curioſity and patience enough to undertake the acquiſition of new varieties by the above methods, and think themſelves amply rewarded if they gain one or two new ſorts that poſſeſs good qualities in reſpect to ſize, form, colour, and flavour.

The method of planting the ſtones for that purpoſe, is, they ſhould be planted in autumn, in drills two or three inches deep, and in ſpring following they will come up, and after having one ſummer's growth, they ſhould, in autumn or ſpring following, be tranſplanted in rows in the nurſery, and in a year or two after may be planted againſt any ſpare wall, pales, or reed fence, and trained as other Peach-trees; and when they have ſhown fruit, thoſe of merit ſhould be planted where they are to remain, which you may propagate or encreaſe by budding, as hereafter directed.

The only method of propagation, however, to continue, with certainty, the approved or any acquired ſorts of Peaches, is by budding, i. e. inoculation; ſince, by inoculating the bud of a tree of any of the kinds, in the ſtem or ſtock of any ſort of Peach, Almond, or Plum, the bud unites with the ſaid ſtock, the head of which being cut off, the bud ſhoots forth, branches out, and becomes a Peach tree, which will produce fruit in ſize, ſhape, colour, and flavour, exactly the ſame as that of the parent tree from whence the bud was taken, and by which means you may multiply any of the ſorts of Peaches, and other fruit trees at pleaſure, and with certainty, ſee INOCULATION; and beſides, trees thus raiſed, much ſooner attain a bearing ſtate than thoſe from the kernels.

Peaches, as above hinted, may be budded upon three or four different ſtocks, *viz.* upon thoſe raiſed from their own kernels, upon the almond, apricot, and plum. See STOCKS.

There is however but one ſort of ſtock proper for general uſe whereon to bud Peaches, which is that of the plum; the Peach, the almond, and apricot ſtocks, are often attacked by the gum, and communicate it to the trees juſt as they arrive at a ſtate of full bearing, and quickly go off; whereas, the plum ſtock being in every reſpect hardier, and better ſuited to different ſoils, Peaches budded upon them are generally healthful, and of long duration; obſerving, however, that experience has proved them to be the moſt proſperous and durable on one particular ſort, which is that of the true muſcle plum.

The propagation or raiſing ſtocks from the varieties of plums indifferently, as alſo of Peaches, almonds, and apricots, may with great eaſe be effected by ſowing the ſtones of the fruit in autumn, in drills two inches deep, and they will riſe freely the ſpring following; and in October they may be tranſplanted in rows two feet and half diſtance, and in the two following ſummers, thoſe that are intended to form dwarfs, may be inoculated with Peach-buds.

But in reſpect to the real muſcle plum ſtock, this cannot be obtained in its true ſtate from the ſtones, for they vary ſo greatly when raiſed from ſeed, that not one in a hundred

hundred will prove of that ſort; therefore, the only method to obtain the true muſcle kind is either by layers in autumn, or by ſuckers that are ſent up from the roots of Peach or plum-trees, that are known to be worked upon that ſort of plum. Theſe ſhould be collected in October or November; chuſe thoſe that are about the ſize of a large gooſe-quill; cut off any knots of old wood that adhere to their roots, and trim off all ſide-branches, and plant them in lines two feet and half diſtance, and in the following ſummer ſome will be fit to bud for dwarfs.

The proper ſized ſtocks to bud upon to form dwarfs, ſhould be about half an inch thick.

But if intended to form half or full ſtandards, the ſtocks, before they are budded, muſt be permitted to form ſtems an inch thick at bottom, and four, five, or ſix feet in height. See STOCKS, NURSERY, INOCULATION, &c.

The ſeaſon for budding them is Auguſt, though ſome perform that work in June and July; but when budded too early, the buds are apt to ſhoot the ſame year, which ſhoots, being weakly, are either killed in winter, or, if they eſcape the froſt, they never make great progreſs; therefore, from about the 25th of July to the 25th of Auguſt is the proper period for that operation, and the buds will remain dormant till ſpring, when they will ſhoot forth with vigour.

The method of performing the operation of budding, and every thing relating thereto for thoſe and other trees, is fully explained under that article. See INOCULATION.

We ſhall therefore only obſerve, that as Peach-trees require to be trained againſt walls, &c. they ſhould be budded principally to form dwarfs, that their branches may at firſt come out low, ſo as they may by degrees be trained to occupy every part of the wall, from bottom to top; the ſtocks ſhould therefore be budded within five or ſix inches of the bottom, but where there are high walls to furniſh, it is neceſſary alſo to raiſe half-ſtandards and ſtandards, to occupy the upper part, while the dwarfs are gradually advancing to cover the whole; the ſtocks, to conſtitute ſuch ſtandards, ſhould for half ſtandards be budded at the height of three or four feet, and for full ſtandards at that of five or ſix, or they may be budded near the ground, and the firſt ſhoot from the bud trained to the above heights to form a ſtem.

Obſerve to inſert only one bud in each ſtock, the heads of which are to remain on entire until ſpring.

In March following, the heads of all the ſtocks are to be cut off ſloping, juſt above the place of inſertion of the bud.

Soon after this the buds will ſhoot forth, each will produce one ſtrong erect ſhoot, which, by autumn, will probably attain three or four feet in height, and the trees have then acquired their firſt ſtate of formation, which, in October or November, ſhould be tranſplanted in the places where they are finally to remain; and in the ſpring after that they muſt be headed down to a few eyes, to procure laterals near the place of inoculation, to give the tree its ſuitable form for the wall, and in two or three years they will bear fruit. See *Planting the Trees*, *Heading Down*, *&c.*

*Of the Situation, Aſpect, and proper Soil for theſe Trees.*

With reſpect to ſituation and expoſure, the Peach-tree being originally a native of warm climates, is, in ſome reſpects, tender, and will not proſper, at leaſt not bear well, in an open ſituation; ſo that for the general part, require to be trained againſt walls.

The trees themſelves, though hardy enough in reſpect to cold, yet the bloſſom and young fruit are extremely impatient of froſt and cutting winds, which generally reign in this country at early ſpring, when the trees bloom and ſet their fruit: the trees, therefore, ſhould be indulged with the ſhelter of a warm wall, or other ſubſtantial cloſe fence, to which they ſhould be planted cloſe, and their branches regularly trained, which is neceſſary, not only to defend the bloſſom and young fruit the better from the inclemency of the weather, but alſo that they may have all the advantages of the ſun's influence, to accelerate its ripening, as well as to give it colour and flavour, which many ſorts, even with all the aid in our power to give, hardly effect in unfavourable ſeaſons in this country.

The proper aſpected walls or expoſure for the fine ſorts, is that of a due ſouth; ſome may alſo be planted upon an eaſt aſpected wall, and in favourable ſeaſons the trees will alſo ſometimes ſet and ripen fruit tolerably on a weſtern aſpect. However, where there is walling enough, let the capital ſorts be always planted againſt ſuch walls, &c. that enjoy the greateſt degree of the ſouth ſun, as even that aſpect, in ſome ſeaſons, is barely

ſufficient to ripen ſome of the late ſorts of theſe fruit, in any part of this iſland.

Such of the forward kinds that you deſire as early as poſſible, ſhould have the warmeſt ſituation on the beſt ſouth wall, which, though ſome are inferior in ſize and flavour, yet when obtained at the earlieſt ſeaſon, they are highly acceptable as a rarity in the deſert.

With reſpect to ſoil, the Peach-tree will proſper in any common ſoil of a garden, where it is not leſs than fifteen or eighteen inches depth of proper ſtaple, i. e. ſuch that is proper for the culture of common kitchen herbage, and where moiſture is not very copious; but if the depth of good ſoil in the fruit-tree borders is two or three feet, it will be the greater advantage.

The breadth of the borders againſt the walls, where it is intended to plant theſe trees, ſhould never be leſs than three, but thoſe of ſix or eight feet is the moſt proper width.

If the natural ſoil of the borders is of a moderately light, pliable nature, and of proper depth, it is a happy circumſtance; and if it is of a loamy temperature, it will alſo be a particular advantage, provided however there is ſuch depth of proper ſtaple as above noticed, before you come at gravel, clay, or any other bad ſoil at bottom, when nothing more than common digging is neceſſary; but where there is leſs than that depth, the borders muſt be raiſed with a due portion of good freſh earth and rotten dung, working the whole well together.

Where good rich or pliable loam could be eaſily obtained from the ſurface of ſome contiguous paſture, common, or other field, and with ſtore of rotten dung, working or blending the whole with the natural ſoil of the border to the proper depth, it would form a fine compoſt, and the trees will proſper, and be of long continuance.

But if the ſoil is naturally ſtiff and clayey, or of any other ſtubborn or very moiſt nature, it may be mellowed by adding dry ſubſtances, ſuch as coal aſhes, drift ſand, road ſoil, and other ſimilar materials, and plenty of rotten dung, working the whole with the natural ſoil to the above depth.

Where any one is ſo happy to poſſeſs a ſoil whoſe natural goodneſs renders all foreign aſſiſtance unneceſſary, no more need be done than digging the borders one or two ſpades deep, and it is fit for the reception of the trees. See KITCHEN-GARDEN, BORDERS, &c.

*Of Planting the Trees.*

The ſeaſon for planting is October and November, or even any time in open weather till March, in dry warm ſoils; but in moiſt or wet ſoils, we prefer the ſpring for that work.

Peach-trees, and, in ſhort, all others that are deſigned for walls, ſhould be planted in their places of final deſtination when they are one year old, i. e. when their heads are of one ſummer's growth from the bud, and with their ſaid heads entire for the preſent, (ſee *Heading them down)* that we may have the opportunity of training them from their origin, as it were, and in their proper poſition in the places where they are finally to remain; for the great art in forming a wall-tree depends entirely upon the due pruning and training the two firſt years, after making the firſt ſhoot or head from the budding.

But if any one is in haſte to have his walls covered at once, as it were, with bearing trees, he may be ſupplied with ſuch at moſt of the nurſeries, which are what the nurſerymen call trained trees, which they ſell from five to ten ſhillings per tree, according to the ſorts, ſize, and property of growth. Every one may do as they pleaſe, but for my own part I always preferred thoſe of one year from the bud; for theſe reaſons, firſt, that trees of that age ſooner and more firmly eſtabliſh their roots, which is an eſſential point to keep in view; and ſecondly, becauſe I would have the tree under my own management from the beginning, which I always found to be of importance.

The diſtance theſe trees ſhould be planted from one another is fifteen feet, and if the walls are high, half or full ſtandards may be planted between the dwarfs, to occupy the upper part while the dwarfs grow up to fill that ſpace, for no part of good walls ſhould be left unoccupied.

The rule is this, if the walls are not above ſix or eight feet high, plant none but dwarfs, and theſe at fifteen feet diſtance; if the walls are nine feet high, half ſtandards, of about three or four feet ſtem may be planted between the dwarfs; and if the walls are ten or twelve feet, or more in height, full ſtandards, of ſix feet ſtem, ſhould be planted to occupy the upper part; and as the dwarfs are to be the principal reſidents, way muſt be made, as their branches gradually advance, by cutting away the lowermoſt ones of the ſtandards by degrees annually, and at laſt, in ſeven, eight, ten, or more years, as you ſhall ſee neceſſary, the

the ſtandards may be entirely taken away, that the dwarfs may advance, and fill the whole ſpace of walling.

The mode of planting being fixed on, mark out on the walls the diſtances as above for the trees.

Then, having recourſe to the nurſery, let the trees be taken up with all their roots as entire as poſſible, for this is of much importance; the extreme ends of all of which ſhould be tipped, i. e. a little ſhortened, and thoſe of broken or bruiſed ones ſmoothed, ſee PLANTING, preſerving the heads entire for the preſent. Holes or pits are then to be opened, capacious enough to receive the roots freely every way. Place the tree therein, about three inches from the wall, with the bud outward, and then break and trim in the earth regularly between all the roots and ſmall fibres, and tread the whole gently, to fix the whole plant in its proper poſition; then directly tack the head to the wall, or tye it to a ſtake, to ſecure it from the power of boiſterous winds till March, when it is to be headed down. See *Heading Down.*

If the enſuing ſpring or beginning of ſummer ſhould prove very dry, indulge the trees with moderate waterings once or twice a week, according to the drought and heat of the ſeaſon, which will encourage them to puſh out more freely and ſtrong after heading down.

*Of Heading Down, and Manner of Pruning, to give the Trees their due Form.*

The trees being planted with their firſt heads from the bud entire, as we adviſed; the next neceſſary culture is to perform the operation of heading them down, which is to be done juſt as they begin to ſhoot, and the proper time is March.

This work conſiſts in ſhortening the head, or firſt main ſhoot down within five or ſix eyes of the bud, or place of its origin, ſloping it off on the ſide next the wall, juſt above an eye, which is a neceſſary operation, both to dwarfs, half, and full ſtandards, that are planted againſt walls; that by ſtopping its upright direction, it may throw out ſeveral lateral ſhoots from the remaining lower part to the right and left, and conſtitute the proper foundation for forming a wall-tree, whoſe firſt branches ſhould always proceed on both ſides, from within ſix inches of the place of inoculation, whether dwarfs for the lower part, or ſtandards for the middle and top of the wall; and that if the heading down was omitted, the conſequence would be, the tree would advance with a naked ſtem, and leave almoſt one half of the allotted ſpace of walling unoccupied.

Therefore, pay no regard to the firſt head from the bud, howſoever large and fine it may appear, but cut it down as above; for the general formation of the tree depends entirely upon the form acquired by this practice, and the two ſucceeding years pruning. See *Heading down Trees.*

*Firſt Pruning after Heading Down.*] The trees being thus headed down, they will ſoon after produce one ſtrong ſhoot from each remaining eye, obſerving that ſuch as proceed immediately from the front and back, are to be conſtantly rubbed off cloſe, but all thoſe that advance from the two ſides are to be preſerved entire, which, in June, when of due length to admit of laying in, ſhould be nailed cloſe to the wall, continuing them thereto at full length during the ſummer.

At the fall of the leaf following, proceed to give them their firſt winter pruning.

This may be done any time from November till March: you are now to examine the number of ſhoots each tree produced the preceding ſummer from the effect of heading down, and to prune them accordingly; for example, if there are two ſhoots, one on each ſide, they are both to be retained, and to encourage their furniſhing a farther ſupply of branches, ſhorten them to eight or ten, or if of very ſtrong growth, to twelve or fifteen inches, and nail them horizontally to the wall.

If there are three ſhoots, the middle one of which is to be cut out cloſe, and ſhorten the other two as above, and nail one to each ſide in a horizontal direction; but if the middle ſhoot of the three be conſiderably weaker than the other two, it may be retained, and nailed in at full length, which probably will furniſh a fruit or two, while the other two are providing a farther neceſſary ſupply of wood; but if it is a ſtrong ſhoot, cut it clean away.

If the tree is furniſhed with four ſhoots, two on each ſide, retain them all, and ſhorten them from ten to fifteen inches, according to their ſtrength, as above, and nail them equally to the right and left.

And if there are five ſhoots, and that thoſe on the ſides are ſtrong, and the middle one weak, ſhorten the former as above, and lay them horizontally, and nail in the middle one entire; but if the latter is nearly of equal ſtrength, or ſtronger than the others, cut it clean

clean out, which, if left, would draw the principal part of the nourishment, and impoverish those of the two sides, which should now be wholly attended to, for the middle will always furnish itself in due time.

One fundamental rule to be observed, is, that your tree, at this period of growth, should, if possible, proceed with shoots of an equal strength and number on each side, and depends principally upon two or four good branches, shortened and trained equally to the right and left, in a nearly horizontal direction, which will not fail in their turn to furnish you with more to occupy the wall upward. See WALL-TREES.

*Second Year's Pruning.*] The trees having had their first year's pruning, observe the following rules in their second year's culture.

During summer, all shoots that arise from the upper and under side of the former year's horizontals, are now to be retained and trained entire, and all buds or shoots that proceed immediately from the front and back part of the said horizontals, should be constantly rubbed off (see *Rubbing off the Buds*), because they cannot be trained consistent with the necessary form and regularity of the tree, having particular regard, however, to reserve all the regular shoots, and train them in at full length; for, except in some particular instances, the shoots must not be shortened in summer, therefore continue them to the wall entire till the winter pruning.

In November, when the leaves are fallen, or any time betwixt that and the beginning of March, you may proceed to the second winter pruning; in performing this, we, for example, will suppose the tree in the first pruning to have been trained with four horizontals, that is, two on each side, and that each of these produced two or three well-placed shoots the preceding summer, or as many as to make the tree now possessed of eight, ten, or twelve branches; now, if these stand four, five, or six on one side, and as many on the other, it is a happy uniformity, and all of which are to be retained, and that to procure still a farther supply of horizontals, each of the above are now to be shortened according to its strength; if they are weakly, cut them to six or eight inches, and if of middling growth to ten or twelve, and if very strong ones to about fifteen or eighteen inches, and train them to the wall horizontally, at six inches distance, observing that the opposite branches of each side range exactly in an equal position.

But where it happens that there are an unequal number of shoots, as for instance, four, five, or six on one side, and seven, eight, or more on the other, and that they are all of tolerable strength; then, to render both sides nearly equal, some of the weakest and worst placed on the fullest side should be cut out.

Observe to proceed as near as possible with an equal number and strength of horizontals in both sides, extending the lowest branches the longest, and if you have now five, six, or eight on a side, trained at five or six inches distance, your tree will begin to assume a handsome form, and next summer you may expect some fruit.

*Observations on the general Pruning of these Trees.*

Having in the preceding head exhibited the manner of pruning and training, to give the trees their necessary form, and the conducting them to a bearing state, we now come to illustrate the method of general pruning.

The general pruning is performed twice every year, i. e. summer and winter. See their *General Summer and Winter Pruning.*

Previous to the general pruning, observe, that Peaches and Nectarine-trees always produce their fruit upon the one year old shoots, that is, the shoots produced each summer bear the succeeding year, and the same individual shoots rarely bear but once, nor do they furnish good bearing wood after the first year, so that the grand article in pruning, is to procure an annual succession of these young shoots in every part, from the very bottom to the extremity every way of the tree, which are to be obtained principally by shortening, in winter pruning, those of every year, whereby they furnish, at the same time, both a proper crop of fruit, and supply of bearing wood.

The great art in pruning and training a Peach and Nectarine-tree against walls, is to preserve uniformity in every part from the beginning, having strict regard that both sides to the right and left advance with equal strength, and number of horizontals, whose numbers on each side should be equally encreased every year, and those trained constantly in a nearly horizontal position, see WALL-TREES, at five or six inches distance one above another, till by degrees they cover the whole space of walling allotted for them, both in breadth and height; for this is very essentially to be observed.

After the tree is thus formed and conducted

ducted to a bearing ſtate, its duration, beauty, and fruitfulneſs depends wholly upon proper pruning every ſummer and winter.

The general ſummer pruning conſiſts in reforming the irregularity of the numerous ſhoots then produced, and training to the wall at full length, in every part, all regularly placed ones, as ſucceſſion-wood for next year's bearing, for the great art is to procure a due ſupply of theſe every ſummer in all parts of the tree.

And the general winter pruning comprehends a general reform among all the branches and ſhoots of all ages, ſizes, and ſituation, ſuch as the retrenching all worn-out and naked branches, as they from time to time occur to make room for thoſe that furniſh the beſt bearing-wood, ſhoots of the preceding ſummer; at the ſame time ſelecting and retaining in every part the beſt of the ſaid ſhoots for next ſummer's bearing, cutting out unneceſſary and irregular ones, and all uſeleſs ſhoots in general, as well as part of the former year's horizontals, to make due room to train the proper uſeful ſhoots; all of which ſhould be ſhortened, to promote their emitting laterals in ſummer for bearing the year after, and the whole then nailed cloſe to the wall in regular order.

*Of the General Summer Pruning.*

The time to begin the ſummer pruning is in May or June. Every one knows that in ſpring a Peach-tree abounds with a great number of ſhoots, ariſing from every ſide of the laſt year's horizontals or preſent bearers, probably three times more than are uſeful, or than are wanted, or can poſſibly be trained in without confuſion; you muſt therefore thin them, and eaſe the tree of all that are irregular, and ſuch that are evidently uſeleſs and ſuperfluous, at the ſame time retaining a ſufficiency of the regular ſhoots, that is, two, three, or four of the ſide ones upon each horizontal, to be trained for next year's bearing.

The rule is this: each of the laſt year's horizontals will probably produce from three to ſix, or more ſhoots, and of theſe, ſome proceed from the upper and under ſides, and ſome from the back and fore parts; thoſe of the former ſituation, i. e. from the upper and under ſides, are to be regarded as the only proper regular ſhoots, and are to be principally attended to, retained, and trained in at full length, to prune upon in winter for bearing the ſucceeding year; but thoſe that proceed directly foreright from the front, and thoſe from the back of the horizontals, or from any of the other parts of the tree in that irregular direction, muſt be rubbed off cloſe, becauſe, by their ſituation on the branches, they cannot be trained with due regularity; therefore, that though good of themſelves, they are to be deemed irregular, or uſeleſs ſhoots, and ſhould be every where diſplaced, except in caſes where horizontals furniſh no other, when the beſt placed of them may be retained.

In reſpect to the regular ſhoots above deſcribed, examine, as you go on, their ſituation and number upon each horizontal; if two or more ſhoots riſe from the ſame eye, retain only one of them; and if the tree is but a moderate ſhooter, it is neceſſary to diſburthen it of all that are evidently ſuperfluous, which are ſuch ſhoots that, though good and well placed, yet if there are four, five, or more on a horizontal, where only one or two is apparently neceſſary for next year's bearing, ſome of the weakeſt and worſt placed, or any remarkably luxuriant ones ſhould be cleared away, retaining however, where practicable, always two of the beſt ſituated and faireſt ſhoots upon the weak, and three or four on each of the middling and ſtrong horizontals, which, though double, or even treble of what will be apparently wanted, it is eligible culture to reſerve enough to chuſe from in winter pruning, training the whole at full length during ſummer.

But where a tree ſhoots very vigorouſly in general, I would adviſe to reſerve as many of the ſide-ſhoots of each horizontal as there are tolerable room to train at full length, which, by dividing the ſap among many, checks luxuriance, which would probably take place in a ſmaller number, for the natural inclination of theſe ſort of trees ſhould, in ſome degree, be followed.

Another circumſtance to be attended to in thinning and regulating the ſhoots, is to leave one good ſhoot at, or as near the end of each bearing horizontal as poſſible, that it may draw the ſap through the whole branch to the nouriſhment of the fruit.

All weak ſhoots riſing from the old wood muſt be diſplaced, unleſs any regular placed ones appear uſeful to fill a vacancy.

If any remarkably vigorous or luxuriant ſhoot ariſe either from the bearing horizontals, or any of the older branches, examine its ſituation and ſtrength, and conſider whether it is wanted; if it is likely to impoveriſh the

the neighbouring ſhoots of moderate growth, or that it is not immediately wanted to fill a vacancy, cut it out; but if uſeful, either to fill a vacancy, or to prevent an apparent one, or to exhauſt too abundant ſap, retain it, and pinch it in May or early in June to four or five eyes, and you will procure one middling ſhoot from each eye the ſame year, to train in, to chuſe from in the winter pruning.

All thoſe very rank or luxuriant ſhoots, diſtinguiſhed ſingularly from the generality of the others of the ſame tree, by their extraordinary ſize, green colour, and often redneſs at the tips, ſhould be cut out from every part, unleſs you have no other reſource to fill a vacancy, when ſuch that are duly placed for that purpoſe may be reſerved and pinched as above obſerved.

Attention ſhould always be had to the bottom or lower part of the trees, eſpecially thoſe that are aged; if any ſtrong ſhoot ariſe in thoſe parts, you muſt preſerve it carefully to ſucceed worn-out or naked branches, which are cut away by degrees, and if there is a preſent vacancy, pinch it early in June to four or five eyes, to furniſh lateral ſhoots the ſame year, to be ready againſt the winter pruning.

Where a vacancy or want of wood is diſcovered, at this time, in any part, and that there is only one ſhoot where two, three, or more are neceſſary, ſhorten or pinch the ſaid ſhoot to three, four, or five eyes, in May or early in June, and it will afford as many laterals the ſame year to fill the vacant ſpace.

In the whole operation of ſummer pruning, obſerve, that all the regular ſhoots you judge neceſſary to retain to prune upon in winter, muſt be left entire, ſhortening none now, except in caſes of vacancy as above, and all irregular and other uſeleſs ſhoots that are now to be taken out, muſt be rubbed or cut off as cloſe as poſſible, leaving no ſtumps, which would ſhoot out from every eye, and fill the tree with innumerable uſeleſs ſhoots, and choak up and darken the fruit, and deprive it of the neceſſary benefit of ſun, air, ſhowers, &c. and which would require much time to cut out in the winter pruning.

It is neceſſary to obſerve, that if the above operations are begun early in ſummer, the ſhoots that are to be diſplaced, may readily be rubbed off with the thumb; but obſerve, if you delay the work till the wood begins to harden, they will not break off eaſily without damaging the mother-branch, therefore uſe the knife, and cut them as cloſe as poſſible.

After the above regulations, let all the remaining ſhoots, when of due length, be trained cloſe to the wall unſhortened, and as their ends advance, continue to train them ſtill along at full length, and which are to remain entire until the winter pruning; for in the common courſe the ſhoots muſt never be ſhortened in ſummer.

Theſe are nearly all the directions we have to advance relative to the ſummer pruning, the utility of which, if the operation is performed in due time, is very great both to the tree and fruit.

Therefore, if the operations are began in May, only juſt rub off all the ill-placed buds, that is, foreright ones, and thoſe behind the bearing horizontals, and ſuch others that are evidently uſeleſs, as formerly obſerved; and in June, when the uſeful or regular ſhoots are of proper length, they are eaſily and expeditiouſly trained in, for every one points to its proper place; beſides, when the work is begun early, it can be performed with conſiderably more expedition and truth, as the uſeleſs buds or ſhoots may then, with the utmoſt facility, be rubbed off cloſe with the thumb, without the uſe of any inſtrument, and the early operation will contribute very conſiderably to the ſize and goodneſs of the fruit, as well as beauty and duration of the trees.

The work however ſhould never be delayed longer than the beginning of June, or till the ſhoots have attained due length for training in, and not, as is often the caſe, wait till they are two or three feet in length, and form ſuch a thicket and confuſion, that the moſt expert pruner would be at a loſs to know where to begin to break through ſuch obſcurity, to determine what is neceſſary to be done, which, beſides, is highly prejudicial to the proſperity of the fruit, the main object, as well as to the beauty and duration of the tree; and the confuſion occaſioned by ſuch a thicket of wood and leaves prevents you from cutting cloſe, and the tree becomes full of diſagreeable ſtumps, producing uſeleſs ſhoots from every eye, which take up much time to remove in the winter pruning, and upon the whole the fruit being hidden, choaked up, and as it were buried behind ſuch a thicket, becomes tender, as is evident from the colour, which

ſcorch-

is rather white than green, and when thus ſuddenly laid open to the air, joined to a ſcorching ſun, great part of it withers and drops off, which never happens when the fruit has from the beginning been inured to the weather, by early rubbing off the uſeleſs, and training cloſe the uſeful ſhoots, ſo as to give the ſun and air free admiſſion; but on the contrary the fruit always excels in ſize, colour, and flavour.

At this time of laying in, or dreſſing, i. e. June, we recommend the following obſervation, which could not be ſo diſcoverable at the earlier dreſſing, viz.

Where ſhort ſhoots, of an inch or two in length, appear upon this or the former year's horizontals, or ſides of the old wood, and that they apparently will not exceed that length, it is of utility to reſerve them, at leaſt till the winter pruning, becauſe they may prove natural fruit-ſpurs, which, at that ſeaſon, is diſtinguiſhable by having a cluſter of bloſſom buds. See the *Winter Pruning*.

If a vacancy is any where diſcovered early in ſummer, you may pinch ſome of the ſtrongeſt neighbouring ſhoots to three or four eyes, and they will furniſh you ſhoots the ſame year, to chuſe from in the winter pruning. See *Pinching the Shoots*.

Do not pull off any of the leaves at this time, as often practiſed, with a view to admit the ſun, for theſe are neceſſary to the growth, both of the young ſhoots and fruit, ſo ſhould never be taken away, unleſs there is indeed in any part ſo great a thicket as to darken the fruit conſiderably, when a little thinning may be neceſſary; in other caſes that work muſt be diſpenſed with till the fruit are full grown.

After the trees have been ſummer-dreſſed, according to the preceding directions, you muſt not forget to review them once a fortnight, to rub off any unneceſſary or ſtraggling ſhoots that may ariſe, which is ſoon done, and to faſten up any ſhoot that may ſtart from its place, or project from the wall, as well as to continue the trained ſhoots in general thereto, as they advance in length.

One thing more, which is neceſſary to obſerve in the ſummer dreſſing, is the blight which attacks theſe trees: this diſorder is the effect of noxious winds, that occaſion the curling up of the leaves, which become thick, clammy, yellowiſh, red, and ſcabby; and attacks the ends of the ſhoots, and proves very injurious both to the young ſhoots and fruit, and often their deſtruction; for the blighted leaves exhauſt the ſap, at the expence of all the other parts of the tree. When your trees are firſt attacked, there is no other remedy for this accident than to pick off all the curled leaves as ſoon as diſcoverable, and alſo cut off, below the diſorder, all the infected part of the ſhoots, which generally form a rough diſagreeable buſh or thicket; this enables the ſap to puſh out new ſhoots lower down, for next year's bearing. So deſtructive is this infection, that it frequently deſtroys in a ſhort time the whole leaves of a wall of trees; and when theſe are gone, the principal part of the fruit ſoon after follow, which generally withers and drops, as likewiſe the young wood, for next year's bearing, either dies or becomes ſtunted. Various other methods have been tried to prevent the ſpreading of this peſtilence, but nothing effectual.

Inſects alſo often prove very injurious to theſe trees; a fumigating engine lately invented is recommended, in which is burned tobacco, the ſmoak of which iſſuing with a perpetual ſtream, is applied to the trees attacked by the vermin, which infallibly deſtroys them, without injury to the trees or fruit. See FUMIGATION, INSECTS, &c.

*Of the General Winter Pruning, &c.*

The winter pruning may be executed any time from the fall of the leaf in November, until the beginning of March; for no weather has any particular effect with regard to proving injurious to the new-cut ſhoots, as ſometimes imagined.

This work however ſhould never be delayed till late in ſpring, becauſe the bloſſom buds will be ſo very turgid or ſwelled, that numbers of them will be unavoidably rubbed off in performing the operation of pruning and nailing; though ſome wait till this period, that they may better judge of the good or bad buds, and of the wood-buds from thoſe that produce bloſſom and fruit. This is of ſome importance, but the ſap is generally riſen ſufficiently in January, or ſooner, to ſwell the buds, to enable you to diſtinguiſh them.

As theſe trees always bear their fruit upon the one year old wood; that is, the ſhoots produced each ſummer bear the fruit the ſummer following, ſo that the fruit-buds are principally to be looked for upon theſe ſhoots.

Wood-buds are diſtinguiſhable by their being long and firm; bloſſom or fruit-buds are round, ſwelling, thick, and ſoft.

It muſt be obſerved that good bloſſom buds are always double, two at an eye, having a

leaf-bud or ſhoot between them; thoſe that are ſingle, though they ſometimes have a leaf-bud, and blow pretty well, never ſet fruit ſo freely as the twin bloſſoms.

Great attention muſt always be had to keep every part of the tree well furniſhed with an annual ſupply of young wood, of the former ſummer, for bearing next year, advancing, as it were, gradually one behind another, from the bottom to the extremity every way; which is eaſily acquired by properly ſelecting, thinning, and ſhortening thoſe of every year, and by cutting out annually ſome of the old horizontals to make room for them. Likewiſe obſerve, that as the bottom of the trees are apt to become naked, be alſo watchful of that part, to retain in proper places an annual ſupply of ſtrong young wood, either to fill an immediate vacancy, or to be trained up gradually to ſupply the place of any naked or worn-out branch, that may happen either there, in the middle, or upper part; which are ſuch that ſupport little or no young wood, or produce weak and a ſcanty portion of ſhoots, and ſhould, wherever they appear, be cut down to the great branch from which they proceed, or to any lower ſtrong young ſhoot they ſupport, or to any convenient branch ſupporting ſuch ſhoots: and part of the old horizontals muſt always be cut out annually, to make room to train in the bearing wood.

Previous to the performing the operation of winter pruning, it is eligible to unnail the greater part of the branches, and all the young ſhoots in general; you then have full liberty to examine the ſtate and ſituation of the whole, as well as to have due command in uſing your knife, and nailing the tree again in regular order, according to the ſituation and ſtrength of the general ſupply of young ſhoots neceſſary to be retained for next ſummer's bearing, &c.

The trees being unnailed as above, you ſhould firſt proceed to examine all the principal branches, and ſee if any are become naked, or worn out. Naked branches are ſuch that, as formerly hinted, have advanced a conſiderable length, and ſupport very little or no good bearing ſhoots, or lateral branches furniſhed with ſuch wood, and ſhould be cut out to their origin, provided there are proper young wood, or horizontals, well furniſhed with ſuch ſhoots, properly ſituated to be trained up to ſupply their places; for way muſt always be made for thoſe branches that furniſh the beſt young wood, both for bearing the following ſummer, and providing a further ſupply of ſhoots for future ſervice. And the worn-out branches are eaſily diſtinguiſhed by their uncommonly weak ſhooting, ſo ſhould be cut out as above, to make room to extend thoſe of better growth, as juſt obſerved.

From theſe you paſs to regulate the ſhoots of the year; of which you will find often, on the ſame tree, weak ones, middle-ſized ones, and ſome of very luxuriant growth; thoſe of the middle ſize are to be principally attended to; obſerving, as noticed in the ſummer pruning, that the proper ſhoots for our preſent purpoſe to train for next ſummer's bearing, are principally thoſe that grow upon the one year old horizontals, and of which we are now to ſelect and retain the moſt regular placed ones, i. e. ſuch that are the moſt properly ſituated for training cloſe and neatly to the wall, which are chiefly thoſe that proceed from the two ſides of the ſaid horizontals, ſo that keeping thoſe in view for training, clear away all the irregular and other uſeleſs ſhoots, as hereunder mentioned.

Suppoſe your tree to be chiefly of moderate growth, and here and there in it ſhoots of ſuperior luxuriance and rankneſs; theſe, whereever ſituated, muſt be cut out cloſe: but if the tree is in general vigorous or luxuriant, the ſhoots muſt only be thinned in a moderate way, as hereafter directed.

All ſhoots of extreme weakneſs ſhould be cut away, unleſs you ſhall ſee it neceſſary to keep one here and there to fill a vacancy, or as a reſerve in caſe of one the future year, in which latter caſe I would cut them down to an eye or two.

I do not comprehend by weak ſhoots thoſe ſhort ones an inch or two long, which I call natural fruit-ſpurs, and often furniſh excellent fruit, and muſt be retained.

All foreright ſhoots, and ſuch that proceed directly from the back of the branches, and in other irregular directions, that cannot be trained conſiſtent with the uniformity of the tree, and thoſe ariſing from the old wood, are alſo to be cut off cloſe, except in caſes of vacancy, and that there is no other reſource.

Cut away all ſtumps of laſt ſummer, and leave none now, cutting every thing cloſe.

During the whole operation of the above reforms, great attention muſt be obſerved in ſelecting and retaining all the well-placed regular ſide-ſhoots above deſcribed, which muſt next be regulated according to the following rules.

Having in this manner cleared your tree from worn-out branches, and from luxuriant, irregular,

irregular, and other bad ſhoots, there is nothing left but uſeful branches ſupporting horizontals, furniſhed with proper young wood, nearly of equal ſtrength, and you ſee your work clear; you have nothing now to do but ſelect and retain upon each horizontal a due portion of the beſt placed of theſe proper ſhoots, and retrench the ſuperfluous ones.

Examine therefore the number of proper ſhoots upon each horizontal, and their ſtrength, keeping in mind, that the middling ſtrong ones are to be principally attended to. We adviſed in the ſummer pruning to leave upon each horizontal two, three, or four ſhoots, according to the ſtrength of the tree in general: now, if your tree is fully trained, no more than one or two, as you ſhall ſee neceſſary, need be left upon each horizontal, except in caſes where a tree is very luxuriant, or where there is a very wide ſpace to fill, or a vacancy in its neighbourhood; but if the tree is ſtill in training, you may retain two or more ſhoots upon each bearer, as you ſhall judge expedient, to forward the tree to its intended form. But ſuppoſe you are upon a full trained tree, or ſuch that are nearly ſo, and that you judge one of the young ſhoots on each horizontal is ſufficient, keeping in view they ſhould be trained about five, ſix, or ſeven inches diſtance; on this conſideration you are to ſelect the beſt of the lowermoſt of theſe ſhoots, unleſs you ſhall judge neceſſary to advance the length of the branch; then chuſe the beſt of the uppermoſt, obſerving that whatſoever ſhoot you fix upon, to cut off the upper part of the horizontal on which it ſtands, cloſe to the ſaid ſhoot, or if you leave two or more ſhoots upon each horizontal, let one be near the upper, and the other near the lower part thereof, on the oppoſite ſides, and cut down the horizontal to the uppermoſt of the two ſhoots, ſo that by cutting away part of each of the former year's horizontal, the remaining part is terminated by a young ſhoot, which now commences the bearer or horizontal of the enſuing year.

Obſerve, where two or more ſhoots ariſe from the ſame eye, never leave but one.

Where any ſhoots riſe from the ſides of the old wood or main branches, and which you ſhall judge neceſſary to retain, either to fill a preſent vacancy, or to be ready for an apparent one, it may be reſerved without ſhortening down the ſaid branch to it, as is neceſſary in the one year's horizontals, unleſs that part of the ſaid branch immediately from the ſhoot upward is naked, or unfurniſhed with young wood, in which caſe take it down to the ſhoot in queſtion.

Thoſe ſhort ſhoots or natural ſpurs, an inch or two long, above obſerved, may be retained wherever they appear, for they are generally well furniſhed with bloſſom buds.

Obſerve, that many of the principal bearing ſhoots which you now retain, will have probably put out ſeveral ſmall twigs or ſide ſhoots; theſe, being produced late, are generally ſpongy, beſides being ſuperfluous or unneceſſary, muſt be cut cloſe, leaving only the main ſhoot.

In cutting out the irregular and ſuperfluous wood in general, cut all cloſe, leaving no ſtump, which would ſend out ſhoots from every eye the enſuing ſummer, and crowd your tree with uſeleſs wood; and any of thoſe ſhort natural ſpurs of the former year, now devoid of bloſſom buds, or that exceed two or three inches in length, ſhould now alſo be cut away cloſe, but eſpecially ſuch that advance directly foreright.

After making theſe reforms of regulating and thinning, we proceed to conſider of ſhortening the remaining ſelect ſhoots, the utility of which is obvious; for as theſe trees always produce their fruit upon the one year old ſhoots, the ſame wood, by proper ſhortening in winter pruning, furniſhes, as well as fruit, lateral ſhoots the following ſummer, to bear the fruit the year after that; therefore, to procure an annual ſupply of young wood in the proper parts, we muſt not omit ſtopping or ſhortening that of each year in the winter pruning, by which each ſhoot will emit two, three, or more lateral ones the ſucceeding ſummer; whereas, if they were left at full length, the ſap which would have thrown out ſhoots below, would mount to the extremities, and leave the bottom bare, and in a ſhort time all the lower part of the tree would become naked, and furniſhed with bearing wood only towards the extreme parts. The rule of ſhortening is this; if the tree is in health, and of a middling free growth, ſhorten or cut off about one third of the length of each ſhoot; for inſtance, ſhoots of ten or twelve inches ſhould be ſhortened to ſix or eight; thoſe of about fifteen or eighteen inches ſhorten to eight, ten, or twelve; and ſo in proportion to the length and ſubſtance of the reſpective ſhoots; obſerving, where a tree is weak, or on the decline, and makes weakly ſhoots, to leave the ſhoots thin, and cut them ſhorter in proportion: on the contrary, where a tree is in general a vigorous ſhooter, leave the ſhoots

cloſe, and ſhorten them moderately, that by retaining a good deal of wood to divide and exhauſt the great redundancy of ſap, is the only means to reduce a luxuriant tree to a ſtate of moderate growth, and to bear plentifully.

In ſhortening theſe ſhoots, it is of importance to cut them juſt above a wood, or branch-bud, that it may produce a ſhoot for a leader, to draw the ſap through the whole horizontal, the more effectually to nouriſh its reſpective fruit. A wood-bud is with facility diſtinguiſhed from a bloſſom-bud, the former is long, narrow, and firm, the bloſſom-buds are roundiſh, thick, ſwelling, and ſoft; ſo that by cutting to a wood-bud you are ſure of a leading ſhoot, and the fruit will be well-nouriſhed; but where two bloſſom-buds appear on the ſame eye, a wood-bud alſo generally iſſues from between, ſo that if you cannot conveniently cut to a wood-bud, make the cut to a twin bloſſom-bud as above.

Thus much for the general directions to be obſerved in the principal winter pruning, although there are other circumſtances that cannot be conveyed by words, nor judged of but upon the ſpot, and depends chiefly upon practice.

We will however ſubjoin a few other particulars very neceſſary to be obſerved.

In the courſe of practice, you will meet with trees of very different habits of growth; ſome, for inſtance, are weakly, and produce ſmall or weak ſhoots; others are of a middling ſtate, ſhoot freely in every part, but not too vigorous, which is the moſt deſireable ſtate of growth of any; and ſome ſhoot very vigorous in almoſt every part. With reſpect to the former, if the tree makes very weak ſhoots, examine whether the diſeaſe is at the root, if it is, pull it up; if not, preſerve it, and dig in rotten dung, which often recovers theſe ſort of trees, obſerving to keep it thin of wood, and prune the ſhoots ſhort, even the beſt to five or ſix inches, till it recovers. In the ſecond caſe, the middling ſhooting tree is to be managed as in the general directions. And in the third inſtance, if the tree is remarkably vigorous, and bear little, it ſhould in ſome degree be humoured in its own way; for if you cut out many, and ſhorten conſiderably the remainder of theſe very vigorous ſhoots, where they are general, as is frequently done without mercy, ſuppoſing by that practice to check luxuriance, and ſo continue to prune, and depend entirely upon the ſmalleſt ones, the conſequence is, that by much thinning, and cloſe cutting vigorous trees, they continue to ſhoot ſtill with greater vigour and irregularity for ſeveral years, without being able to gain either form or fruit, till at laſt, by ſevere pruning, they paſs into the oppoſite extreme, become, as it were, tired with acting ineffectually, grow very weak and ſickly, and ſhoot no more. On the contrary, by following, in ſome degree, the inclination of the tree, and leave the ſhoots as cloſe as there are any tolerable room to lay them in, and ſhorten them very little, ſome of the ſtrongeſt not at all; and by thus leaving a good deal of wood, and that at a conſiderable length, the ſap is divided, and the luxuriance is checked; and in a year or two your tree will become a moderate ſhooter, and furniſh fine young wood, and bear plentifully.

*The Method of Nailing them.*

The trees being pruned, they ſhould be directly nailed to the wall; this however ſhould always be done as you go on, that is, as ſoon as one tree is pruned let that be nailed before you prune another.

This operation is ſufficiently explained under the article WALL-TREES and NAILING: we ſhall juſt obſerve, that as your trees having, previous to the pruning, been entirely unnailed, you have the opportunity of nailing the whole with the greateſt regularity, obſerving to bring the lowermoſt branches on each ſide down horizontally, and train them along perfectly ſtrait, and ſo much horizontal, that the extremities be but a few inches higher than the bottom: nail them cloſe, proceeding in the ſame manner with the next immediately above them; and ſo of all the reſt, making the oppoſite principal or mother-branches on each ſide, range nearly in the ſame poſition, preſerving on each ſide an equilibrium of number and ſtrength, obſerving nearly the ſame of their reſpective horizontals or bearers, training them ſtrait and regular, at five or ſix inches diſtance from one another, obſerving if the pruner has left in any place more wood than can conſiſtently be new laid in; the nailer muſt regulate that according to his diſcretion, by either cutting out entirely ſuch ſuperfluous or unneceſſary ſhoots, or take it down to one eye to furniſh a ſhoot for another year, if he ſhall judge it of utility.

*Of defending the Bloſſoms.*

Peach-trees come into bloſſom early in ſpring, when cutting froſts prevail, which, in

in ſome ſeaſons, is ſo ſevere as to cut off the whole. Not only the bloſſom is liable to this diſaſter, but alſo the young fruit, till they are as large as ordinary cherries, which oblige us to have recourſe to all poſſible means to defend them.

The dangerous time laſts a month or ſix weeks; various ways have been tried to ſhield the trees during that period; ſome cover with large garden mats, which I have often found of great uſe; but where there are much walling, it takes up much time to cover and uncover, as the danger threatens, for they muſt only be uſed when there is apparent danger: free air and light muſt be admitted, ſo that if the mats are nailed up in an evening when there is an appearance of a cutting froſt, they ſhould be removed again in the morning, if the weather is quite mild; but if not, they may be permitted to remain till it is: do not omit however to take them down when the weather changes; and ſo continue their uſe only occaſionally, till your fruit are as big as large peas at leaſt.

This is the principal expedient in practice to defend theſe trees, which, after all, it ſometimes does not ſecure us a quarter of a crop; it however ſhould not be omitted in hazardous times, eſpecially to ſome of the early and choice ſorts. See COVERING TREES.

There is another method which I have ſometimes experienced to ſave a few fruit, when all that have been fully expoſed was cut off; this is to procure a quantity of cuttings from the branches of evergreen trees, ſuch as thoſe of laurel, yew, ſpruce-fir, &c. and ſtick them moderately thick between the branches of the Peach-tree, ſo as the leaves of the cuttings cover the bloſſom; theſe ſhould be placed when the bloſſoms begin to open, not too thick to darken it, and may be permitted to remain until the beginning of May, when the fruit will be ſet, and paſt danger. In default of the above cuttings, I have uſed branches of dried fern.

Neither of theſe methods of covering, nor indeed any other can we recommend as generally effectual; but a poor expedient is better than none; they often inſure a few fruit, when thoſe that are fully expoſed are all deſtroyed by the froſt.

*Thinning the Fruit.*

In favourable ſeaſons Peach and Nectarine-trees ſometimes ſet their fruit very thick in every part, often double or treble the quantity that have room to grow, or the trees capable of nouriſhing, and frequently the fruit are ſet only here and there in cluſters; in either caſe they muſt be thinned, otherwiſe the fruit will not attain half its common ſize, and during their growth would thruſt one another off; beſides, if the trees are overloaded, they would produce but very weakly ſhoots for next year's bearing, and would be two years before they recovered themſelves.

This work ſhould be performed when the fruit have attained nearly the ſize of ſmall cherries, which will be about the beginning or middle of May, for if you thin them ſooner, froſts may deſtroy the remainder, and you have no reſource left.

The rule of thinning is, if the tree is weak the fruit muſt be left thin, not more than one or two on the larger ſhoots, and none upon the ſmall ones, which is the only way to inſure wood for another year: upon trees of a middling ſtrong growth you ſhould retain but one fruit upon the ſmaller ſhoots, and two upon the middling ſized ones, and three upon the ſtrong ſhoots: but the ſmalleſt kinds of fruit may be left a little thicker in proportion, and the large ſorts ſhould be thinner, i. e. about ſix inches diſtance upon each ſhoot, and the largeſt of all eight or ten. In performing this work, obſerve to ſelect and retain the beſt placed, largeſt, and faireſt fruit, in every part, according to the above rule; and in removing the ſuperabundant ones, be careful not to diſturb theſe. Leave no where two or more upon the ſame eye, eſpecially if one exceeds the other in ſize, taking off the ſmalleſt, which the other would ſtarve; but if they are of equal ſize, you may, if it ſhall ſeem neceſſary, leave both of them.

We formerly obſerved, that it was of utility to preſerve a ſlight coverture of the leaves of the tree, by way of ſhade to the fruit during their growth, and until they begin to change colour: when they have attained that ſtate of perfection, it is neceſſary to pinch off a few of the leaves that immediately cover the fruit, to admit the ſun to give it colour and flavour.

Do this however regularly, and thin the leaves by degrees, which ſhould be pinched, and not torn off, which would mangle the eyes, and prevent the fruit buds from forming themſelves for next year.

*General Obſervations.*

Peach-trees, from the time of heading down to the ſixth or ſeventh year, may be ſaid

ſaid to be in a ſtate of training, though they frequently begin to bear the ſecond or third year after the operation of heading down; and in five, ſix, or ſeven years will bear pretty plentifully, according to their ſize, for they will not have attained their full growth till they are ten, twelve, or fifteen years old, according to the extent of walling they have to cover, at which age they will be arrived at the beginning of their ultimate ſtate of vigour and perfection of bearing, which they generally acquire between the ſeventh and fifteenth year, and in which they will continue for twenty or thirty years to come; for theſe trees, with due management, will endure fifty or ſixty years, provided no accidents happen, ſuch as violent blights, or tainted with gum, or attacked by vermin; ſo that the opinion of ſome, that Peach-trees are ſeldom of more than twelve or fifteen years duration, is erroneous, and muſt be given up, for it is owing only to bad management that they do not laſt as long as other fruit-trees.

The trees may be ſaid to be in their third ſtate when they begin to decline through age; but if our general directions in pruning are obſerved, this ſeldom happens until they are upwards of thirty or forty years old, when they ſhould be cheriſhed by leaving only the beſt young ſhoots, and that moderately thin, and which ſhould be pruned ſhorter than the general rules, and make the moſt of ſtrong young wood that riſe from or near the bottom, to ſupply the place of worn-out branches.

When it is obſerved any trees approach near their end, and the bottom of the walls become naked, young trees ſhould be planted in due time in the ſpaces between the old ones to ſucceed them, and as they ſhoot up lop off the lower branches of the old trees, which in four or five years may be taken entirely away; thus you may keep your walls always occupied, without intermiſſion.

It ſometimes happens that the trees do not bear fruit of the approved or deſired ſort, which is often the mortifying circumſtance when purchaſed in ſome nurſeries, and a very cruel one, after all the trouble of training, &c. To remedy this, you, in Auguſt, may bud ſome of the young ſhoots of the ſame year, in different parts of the tree, and as theſe advance cut the other parts away, and in two or three years they will ſpread conſiderably, and bear fruit.

If the gum has attacked any ſhoot of a tree, young or old, cut it off an inch below, to ſtop the communication, and prevent killing the whole ſhoot.

The utility of tillage to theſe trees is very obvious, and ſhould be performed every autumn and ſpring.

Dung, in moderation, is alſo of utmoſt utility in preſerving due vigour and health in theſe trees, and to promote the ſize of the fruit; let it be perfectly rotten, and added every two or three years, ſpreading it all over the border, and dig it in in the uſual way.

As to cultivating kitchen herbage on the borders, the moderate growing ſorts, ſuch as radiſhes, lettuce, ſmall ſallad herbs, kidney-beans, a few ſmall early mazagan beans, peas, &c. do very little or no injury to the trees.

Peach and Nectarine-trees are often planted in forcing-frames and hot-walls, to produce early fruit; the ſorts proper for this are the earlieſt kinds: for the method of performing it, ſee FORCING-FRAMES and HOT-WALLS.

*Of planting theſe Trees for Ornament.*

There are two varieties of Peach-trees that are eſteemed chiefly by way of curioſity and ornament, which we judge it moſt proper to ſpeak of under a ſeparate head. Theſe are, the

Double bloſſomed Peach-tree.——Dwarf Peach-tree.

The former of theſe has great beauty in its double flowers; it attains the height of common Peach-trees, and differs in nothing from them but in the doubleneſs of its flowers, which, like thoſe of the others, are ſucceeded by fruit: the tree makes a fine appearance in ornamental plantations.

The Dwarf Peach riſes but two or three feet high; the ſtem is ſmall, and hath very ſlender branches, which produce ſmall inſipid fruit, the ſize of a nutmeg. It is ſometimes planted in pots, and brought to table with the fruit upon for curioſity, and makes a ſingular appearance.

For purpoſes of ornament, any of the ſorts of Peach-trees may, with propriety, be admitted as ſtandards in the ſhrubbery, and will make a fine appearance when in bloom, and if they ſtand in a ſheltered ſituation, there will be a chance of having now and then ſome fruit from them: they may either be planted as ſtandard-dwarfs, or as half or common ſtandards.

The propagation of the Double Bloſſomed and Dwarf kind is effected by budding the ſame as common Peach trees.

*Third*

*Third Diviſion of Amygdalus.*

AMYGDALUS-NUCIPERSICA, the Nectarine-Tree.

Claſs, order, and characters the ſame as the Amygdalus.

The Nectarine and Peach-trees have been generally conſidered as diſtinct ſpecies, principally by the difference of their fruit; but late diſcoveries has determined otherwiſe, and that they are found to be varieties of one another, but which is the original is not yet agreed on; but certain it is, that there have been inſtances of Nectarines growing naturally on Peach-trees, accompanied by Peaches on the ſame branch; which very ſingular phœnomenon determines them to be varieties of one ſpecies.

Neither the trees, by their manner of growth, the wood, leaves, nor flowers of Nectarines and Peaches, can with any preciſion be diſtinguiſhed from one another; but the fruit is diſtinguiſhable at ſight in all its ſtages of growth: that of the Nectarine hath a ſmooth firm ſkin or rind, and the Peach is covered with a ſoft downy matter; the fleſh too or pulp of the Nectarine is conſiderably firmer than that of Peaches.

Their temperature and general culture is the ſame in every reſpect.

However, as they are generally conſidered as different fruit; we, for diſtinction ſake, range them in ſeparate diviſions, though all under the principal genus Amygdalus.

The varieties of Nectarines that merit eſteem are,

[1]*Fairchild's early Nectarine.*] A ſmall round Nectarine, of a bright red on one ſide, the other yellow; ripe beginning or middle of Auguſt.

[2]*Violet Nectarine.*] A middle-ſized fruit, purple on one ſide, the other of a yellowiſh green, tinged with red; ripe latter end of Auguſt.

[3]*Elrouge Nectarine.*] A middle-ſized long-iſh Nectarine, purple or dark red on one ſide, the other yellow, and the rind becomes ſhrivelled, and the pulp ſeparates from the ſtone; ripe end of Auguſt.

[4]*Newington Nectarine.*] A large beautiful Nectarine, being of a fine ſcarlet or bright red on one ſide, the other changing gradually to a bright yellow, and adheres to the ſtone; ripe beginning or middle of September.

[5]*Red Roman Nectarine.*] A fine large, round, dark red Nectarine, aſſuming a yellowiſh hue on one ſide, the whole becomes ſomewhat ſhrivelled, and adheres to the ſtone; ripe middle of September.

[6]*Temple's Nectarine.*] A middle-ſized long-iſh Nectarine, pale red on the ſunny ſide, the other a yellowiſh green, and ſeparates from the ſtone; ripe middle of September.

[7]*Tawney Nectarine.*] A middle-ſized round-iſh fruit, of tawney red on one ſide, the other a duſky yellow, and adheres to the ſtone; ripe in September.

[8]*Scarlet Nectarine.*] A middle-ſized, wholly red, beautiful Nectarine, the ſunny ſide being ſcarlet, the other a pale red colour, and adheres to the ſtone; ripe beginning and middle of September.

[9]*Brugnon or Italian Nectarine.*] A large fruit, deeply reddened next the ſun, and yellowiſh on the other ſide, and adheres to the ſtone; ripe in September.

[10]*Golden Nectarine.*] A middle-ſized round Nectarine, faintly reddened on the ſunny ſide, the other parts are of a golden yellow, and adheres to the ſtone; ripe late in September.

[11]*Murry Nectarine.*] A middle-ſized fruit, of a duſky purpliſh red on one ſide, the other a yellowiſh green, and adheres to the ſtone; ripe beginning or middle of September.

[12]*Virmaſh, or Peterborough Nectarine.*] A middle-ſized, round, greeniſh Nectarine; ripe middle or end of October.

Of the above twelve varieties of Nectarines, if you would cultivate only the beſt, I ſhould adviſe to plant the following. Fairchild's Nectarine claims a place for its early perfection. The Violet and Elrouge Nectarines are pretty fruit, ripen freely, and their flavour is rich and vinous. The Newington and Roman are the largeſt, moſt beautiful, and beſt flavoured Nectarines in the world. Temple's Nectarine is alſo a very good fruit, and is well eſteemed; and the Virmaſh or Peterborough Nectarine merits a place in the collection, becauſe it ripens late, and furniſhes a variety for the deſert after all the others are gone.

The Nectarine-tree is in temperature and manner of growth, in every reſpect, like the Peach, and like that tree requires to be trained againſt the walls, and in the ſame aſpect and ſoil.

Its propagation alſo, and whole management in all its ſtages of growth, is the very ſame as the Peach-tree.

Therefore, to avoid unneceſſary repetition, the reader is requeſted to turn to the *Amygdalus-Perſica*, or Peach-tree, for the method

of

of propagation, planting, pruning, and every other article of culture, where an ample direction, equally applicable to the peach and Nectarine, is given.

ANACARDIUM, Acajou, or Caſhew-Nut.

There is but one ſpecies; it is of the tree kind, a native of both Indies, and retained here in ſtoves for curioſity.

Claſs and order, *Decandria Monogynia.*

*Characters.*] CALIX, five ſharp-pointed deciduous leaves. COROLLA, five long, narrow, reflexed petals. STAMINA, ten ſhort filaments, and roundiſh antheræ. PISTILLUM, a roundiſh germen, inflexed ſtyle, and oblique ſtigma. PERICARPIUM none, the receptacle becomes a large round pulpy ſubſtance, crowned by a kidney-ſhaped nut.

There being but one ſpecies, it is named ſimply *Anacardium.*

This tree appears as a ſmall ſhrub here in our ſtoves; but in the Indies it riſes twenty feet in height, dividing into ſpreading irregular branches, decorated with large oval leaves, and ſmall white flowers in umbels at the ends of the ſhoots, ſucceeded by a large yellow pulpy receptacle, crowned by the fruit, which is a kidney-ſhaped nut, an inch long, containing an eatable ſweet kernel, very palatable when roaſted.

The propagation of this plant is by planting the nuts, which are brought hither annually by the Weſt India ſhips.

They are to be planted ſingly in ſmall pots, and plunged in the bark-bed, and the plants will appear in a month; continue them always in the ſtove.

ANAGALLIS, Pimpernel.

The plants are herbaceous, one of which is the common trailing annual Pimpernel, a weed of the garden and fields; and one is an erect, ſmall, ornamental perennial of the green-houſe.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX is monophyllous, five-parted, and permanent. COROLLA is monopetalous, wheel-ſhaped, and five-parted. STAMINA, five erect ſhort filaments. PISTILLUM, a globular germen, ſimple ſtyle, and headed ſtigma. PERICARPIUM, a globular capſule, and many angular ſeeds.

The ſpecies that merit culture is,

ANAGALLIS *Monelli.*

*Monelli, or Perennial Anagallis.*] Anagallis with erect ſtalks, and ſpear-ſhaped leaves.

This is a low erect perennial, a foot high, ſomewhat buſhy, and cloſely adorned with leaves, by pairs, or by threes, and numerous wheel-ſhaped blue flowers on long foot-ſtalks, which make a pretty appearance.

The propagation of this plant is either by ſeed on a warm border in April, or by cuttings in the ſhade in ſummer, and muſt be potted and houſed in winter; ſhift them occaſionally into larger pots, removing them each ſhifting with the ball of earth entire about their roots, and give moderate waterings in common with other woody exotics of that department.

ANAGYRIS, Stinking Bean Trefoil.

This genus furniſhes two hardy deciduous flowering ſhrubs, adorned with oval leaves and long ſpikes of papilionaceous yellow flowers.

Claſs and order, *Decandria Monogynia.*

*Characters.*] CALIX, a monophyllous, bell-ſhaped, five-parted cup. COROLLA is papilionaceous, the ſtandard broad and heart-ſhaped; the wings oblong and plane; and the keel long and erect. STAMINA, ten diſtinct filaments, and ſimple antheræ. PISTILLUM, an oblong germen, ſimple ſtyle, and hairy ſtigma. PERICARPIUM, a large oblong pod, containing kidney-ſhaped ſeeds.

The ſpecies are,

1 ANAGYRIS *Fœtida.*

*Common Stinking Anagyris.*] Anagyris with oval leaves and ſpikes of flowers, proceeding from the ſides of the branches.

2 ANAGYRIS *Creticum.*

*Cretan Stinking Anagyris.*] Anagyris with oblong leaves and longeſt ſpike of flowers.

Theſe ſhrubs riſe eight or ten feet in height, decorated with ſimple, alternate, hoary leaves, and numerous bright yellow butterfly-ſhaped flowers, diſpoſed in long hanging ſpikes, ariſing from the ſides of the branches in May and June, but rarely perfect good ſeeds in England.

They are exotics of Spain, Italy, and the Archipelago Iſlands, but proſper here in the full ground.

The propagation may be effected both by ſeed and layers.

The ſeed is procured from abroad by the nurſery-men and ſeeds-men, which ſhould be ſown in a bed of light earth in March, and the plants will appear in May; give occaſional waterings in ſummer, and ſhelter the firſt winter from ſevere froſt; in March following plant them out in rows, and in two, three, or four

four years they will be of due ſize for the ſhrubbery.

ANANAS, the Pine-Apple. See BROMELIA.

ANASTATICA, Roſe of Jericho.

This is a very low buſhy annual, adorned with oval leaves and ſmall whitiſh flowers, of four petals, diſpoſed in ſhort ſpikes.

Claſs and order, *Tetradynamia Siliculoſa.*

This plant has great ſingularity, which is, that in autumn, when it begins to decay, it contracts itſelf; and if then taken up and preſerved in a dry place till next year, nay for many years, then placed in warm water, it will expand as in its natural growth.

It is raiſed from ſeeds in March or April, in a hot-bed, and in May the plants may be potted and placed in the full air; they will flower in June, and, with occaſional ſhelter of a frame, will perfect ſeeds in autumn.

ANCHUSA, Bugloſs.

There are eight or nine ſpecies, all of which are herbaceous, chiefly perennial, and of hardy growth; ſome grow erect, others trail, garniſhed with rough ſimple leaves, and monopetalous funnel-ſhaped flowers, four or five of which merit culture, ſome as ſalutiferous medical plants, others for ornament.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX is acutely five-parted, and permanent. COROLLA, monopetalous, funnel-ſhaped, and five-parted at the brim. STAMINA, five ſhort filaments, and incumbent antheræ. PISTILLUM, four germina, a filiforme ſtyle, and obtuſe ſtigma. PERICARPIUM none, the four ſeeds being lodged in the calix.

The ſpecies of moſt note are,

[1] ANCHUSA *Officinalis.*

*Common Officinal Bugloſs.*] Anchuſa with erect ſtalks, ſpear-ſhaped leaves, and imbricated ſpikes of flowers.

*Varieties of this.*] Common Bugloſs with blue flowers.—Common Bugloſs with white flowers.—Common Bugloſs with red flowers.

[2] ANCHUSA *Sempervivens.*

*Ever-green broad-leaved Bugloſs.*] Anchuſa with trailing branches, broad leaves, two leaves on the pedunculuſes, and ſhort ſpikes of blue flowers.

[3] ANCHUSA *Orientalis.*

*Eaſtern Yellow Bugloſs.*] Anchuſa with trailing branches, hairy woolly leaves, the branches and flowers growing alternately, and oval bractæ on the ſpikes between the flowers.

[4] ANCHUSA *Virginiana.*

*Virginian ſmall Yellow Bugloſs.*] Anchuſa with a low ſmooth ſtalk, and bright yellow flowers, placed in looſe ſpikes.

All theſe are herbaceous perennials, that proſper in almoſt any ſoil and expoſure, though they are of longeſt duration in dry ſoils.

The two firſt ſorts grow naturally in Britain, but all the others are of foreign growth.

The roots of all the ſorts are fibrous.

The ſtalks and branches are round, thick, and moſtly very rough and hairy, decorated with ſimple, oblong, very rough leaves, placed alternate; and numerous flowers, collected into cluſters and ſpikes, ornament the upper parts, each ſeparate flower formed of one infundibuliforme or funnel-ſhaped petal, having a long tube below, and a ſpreading brim, appearing, in the different ſpecies, in ſpring, ſummer, and autumn, and continue in long ſucceſſion on the ſame plant, which, in all the ſorts, are ſucceeded by abundance of ſeed in autumn.

The *Anchuſa Officinalis*, and reſpective varieties, obtain two feet in height, ſending forth many ſide ſhoots, and a numerous ſucceſſion of flowers in June and July.

The Evergreen Bugloſs and *Oriental Anchuſa* extend their branches upon the ground, which furniſh a ſucceſſion of flowers moſt of the ſummer months, and the former often continues in bloom from May till Chriſtmas.

The *Virginian Anchuſa* is a very low plant, but is valuable for its producing numerous flowers early in ſpring.

*Uſes in Gardens, Propagation, &c.*

In reſpect to their uſes in gardens, the Common Bugloſs is eſteemed principally for its medical properties; but all the varieties may alſo be employed with the other ſpecies as plants of ornament, for the embelliſhment of the compartments of large gardens, where many plants of eaſy culture are required; where, though the flowers poſſeſs no remarkable beauty, they will appear conſpicuous enough to encreaſe the variety.

All the ſorts love a dry ſoil, for though they grow ſtrongeſt in moiſt rich land, yet their duration in ſuch ſoils is rarely more than two or three years.

The propagation of all the ſorts is by ſeed, in autumn or ſpring, in a bed of light earth, and in May, June, or July, the plants will be large enough for tranſplantation into the places where they are finally to remain.

All the ſorts riſe freely from the ſcattered or ſelf-ſown ſeeds.

ANDROGYNA *Planta*, (from a man and a woman.) By botaniſts a plant is termed Androgynous, which produce both male and female flowers on the ſame root; the cucumber, melon, gourd, &c. and of trees, the oak, platanus, cheſnut, walnut, mulberry, birch, hornbeam, hazel, &c. furniſh examples. See *Maſculus Flos*, *&c.* Androgynous plants conſtitute the claſs *Monoecia* of Linnæus. See MONOECIA.

ANDROMEDA.

The plants of this genus are principally of the tree and ſhrub kind, moſtly deciduous, hardy, and of moderate buſhy growth, adorned with ſimple alternate leaves, and ſmall monopetalous bell-ſhaped flowers, in ſpikes, or cluſters.

Claſs and order, *Decandria Monogynia.*

*Characters* ] CALIX is acutely five-parted, coloured, and permanent. COROLLA, one bell-ſhaped petal, cut into five reflexed ſegments. STAMINA, ten ſhort filaments affixed to the corolla, and two-horned antheræ. PISTILLUM, a roundiſh germen, long permanent ſtyle, and obtuſe ſtigma. PERICARPIUM, a pentagonal capſule of five cells, containing many roundiſh ſeeds.

The ſpecies are,

[1]ANDROMEDA *Arborea.*

*Tree Andromeda, or Carolina Sorrel-Tree.*] Andromeda with oblong, oval, pointed, alternate leaves, roundiſh-oval greeniſh flowers, diſpoſed in long naked ſpikes, proceeding from the ſides of the branches.

[2]ANDROMEDA *Paniculata.*

*Paniculate-ſpiked Virginia Andromeda.*] Andromeda with oblong, crenated, alternate leaves, and cylindrical yellowiſh flowers, in branching naked ſpikes at the ends of the branches.

[3]ANDROMEDA *Mariana.*

*Maryland Aggregate Andromeda.*] Andromeda with oval entire leaves, placed alternate, and greeniſh flowers, collected in aggregate bunches.

[4]ANDROMEDA *Calyculata.*

*Caliculate Box-leaved, Canada Andromeda.*] Andromeda with obtuſe, ſpear-ſhaped, punctured, alternate leaves, and cylindrical white flowers, diſpoſed in ſhort leafy ſpikes at the ends of the branches.

*Variety.*] Caliculate oval-leaved, evergreen Andromeda.

[5]ANDROMEDA *Racemoſa.*

*Racemoſe-ſpiked Penſylvania Andromeda.*] Andromeda with oblong ſerrated leaves, and cylindrical ſwelling flowers, in cluſtered bractæal ſpikes.

Theſe plants are natives of North America, where they grow naturally in marſhy or boggy places; the firſt of which is ſomewhat impatient of ſevere froſt, but all the others are very hardy, and proſper beſt in moiſt ſituations.

The tree *Andromeda* riſes ten or fifteen feet in height, the branches ſlender and drooping; this is ſomewhat tender; ſo ſome plants ſhould be retained in pots to be ſheltered in winter.

The *Andromeda Paniculata* is a ſhrub of three or four feet ſtature, and ſends forth many branches.

The other three ſpecies are low buſhy ſhrubs, rarely exceeding two feet in height.

All theſe ſhrubs flower here annually in June and July, but they rarely ripen ſeed in theſe parts.

*Uſes, Propagation, &c.*

With reſpect to the utility of theſe ſhrubs in gardens, the firſt ſort is admitted principally among the green-houſe plants, and delights in moiſture; the other ſorts may be admitted to encreaſe the variety in the ſhrubbery; but they ſhould have a moiſt ſoil, otherwiſe they will not proſper in ſummer.

The propagation of all the ſpecies may be effected by ſeed, which is imported by the ſeedſmen annually from America, which muſt be ſown in ſpring in a bed of moiſt earth.

They may alſo be encreaſed by layers in autumn.

All the ſhrub kinds may alſo be propagated by ſuckers, which they ſend up pretty plentifully every year from the roots.

ANGIOSPERMIA, the name of the ſecond of the two orders in the claſs *Didynamia* of Linnæus. See DIDYNAMIA.

The eſſential character of this order is, that the ſeeds of the reſpective plants included therein are lodged in a pericarpium, i. e. a veſſel or pod, which diſtinguiſhes it from the other order *Gymnoſpermia*, of the ſame claſs, where the ſeeds are placed naked in the bottom of the calix. See GYMNOSPERMIA.

ANEMONE, including the Pulſatilla, or Paſque-Flower, and the Hepatica.

It will ſeem ſtrange to ſome to ſee the Pulſatilla and Hepatica retained as ſpecies of the Anemone, which were formerly ranged as diſtinct genera, but late improvements in botany have proved their general characters to be

be the ſame, and proclaim them all relations of the ſame family, and as ſuch we muſt treat of them, though, as they differ extremely in their general appearance, as alſo in their culture, we, for diſtinction ſake, will exhibit them in ſeparate diviſions, under the generical name Anemone. See ANEMONE-PULSATILLA, and ANEMONE-HEPATICA.

Claſs and order, *Polyandria Polyginia.*

*Characters*] CALIX none. COROLLA, ſix or nine petals, diſpoſed in two or three ſeries. STAMINA, numerous capillary ſhort filaments, and double antheræ. PISTILLUM, numerous germina collected into a head, pointed ſtyles, and obtuſe ſtigma. PERICARPIUM none; the ſeeds, which are numerous, reſt on the receptacle, and form an obtuſe cone.

The above characters is applicable, not only to the ſpecies commonly conſidered as Anemones, but alſo to the Hepatica and Pulſatilla.

*Firſt Diviſion.*

In this diviſion we will exhibit only all thoſe ſpecies commonly called Anemones.

The ſpecies are,

[1]ANEMONE *Coronaria, Anguſtifolia.*

*Narrow-leaved coronated Garden Anemone.*] Anemone with the radical leaves divided and ſubdivided by threes, into many narrow ſegments, and a leafy involucrum.

*Varieties.*] The varieties, in reſpect to the colour and variegation of the flowers, are innumerable; but the principal plain colours are, red, blue, crimſon, purple, aſh-colour; and the variegations are, red and white, roſe and white, blue and white; red and white and purple, with innumerable intermediate ſhades; and with ſingle and double flowers, of every colour and variegation.——Proliferous narrow-leaved Anemone, one flower growing out of another.

[2]ANEMONE *Hortenſis, Latifolia.*

*Broad-leaved Garden Anemone.*] Anemone with digitate or hand-ſhaped fingered leaves, having broad ſegments.

*Varieties.*] Flowers of many colours and variegations.

[3]ANEMONE *Nemoroſa.*

*The Wood Anemone.*] Anemone with leaves divided by threes, having the ſegments deeply cut, and one flower on the ſtalk.

*Varieties.*] Common Wood Anemone with ſingle white flowers.—Double white Wood Anemone.—— Purple-wood Anemone.—Double purple Wood Anemone.—Reddiſh-purple Wood Anemone.

[4]ANEMONE *Apennina.*

*Apennine Blue Wood Anemone.*] Anemone with ternate divided leaves, having the ſegments deeply cut, and numerous ſpear-ſhaped petals to the flower.

*Varieties.*] Common Apennine Wood Anemone, with ſingle blue flowers.—Double blue Apennine Wood Anemone.—Violet-coloured Apennine Wood Anemone.—Double violet-coloured Apennine Wood Anemone.

All theſe ſpecies and reſpective varieties are hardy herbaceous perennials, that will proſper in any common ſoil of a garden, either in beds ſeparately, or in the borders among other plants of the flowery tribe.

They are perennial in root, but annual in leaf and ſtalk, which riſes in ſpring, and periſh to the ground when they have flowered and perfected ſeeds.

The roots are tuberous, knobbed, ſolid, fleſhy, and firm; the leaves riſe on foot-ſtalks directly from the root, which, in all the ſorts, are ſimple, but are cut into many narrow parts, the diviſions being generally by threes; and between the leaves riſes the flower-ſtalk, from five or ſix inches to one foot in height, ſurmounted each by one flower, which ſtands naked without any cup, which, in the ſingle kinds, have generally from ſix to twelve petals, but in the double ſorts the petals are of an indeterminate number, which are often ſo numerous and full, as to exclude the parts of fructification; but the ſingle and half-double kinds afford plenty of ſeed annually.

*General Deſcription of the Garden kinds.*

The two firſt ſpecies, *Anemone Coronaria*, and *Anemone Hortenſis*, are the Eaſtern or Garden Anemones, and the parent plants of all thoſe numerous beautiful different coloured ſingle and double varieties that adorn our gardens in ſpring, and beginning of ſummer; they are originally natives of the Levant, and other parts of the Eaſt; but grow freely with us in the full ground, with little trouble, in beds or borders, and furniſh an annual ſucceſſion of their beautiful flowers ſix weeks or two months, and perfect abundance of ſeed annually, and their roots multiply exceedingly.

Their roots, as before hinted, are tuberous, knobbed, irregular, and formed into unequal knobby heads.

The leaves are ſimple, large, and decompound, which, in the firſt ſort, *Anemone Coronaria*, and all its varieties, are deeply di-

vided into many ſegments, and theſe again ſubdivided into numerous narrow diviſions; ſo, for diſtinction, this ſpecies is called Narrow-leaved Anemone. The ſecond ſort, *Anemone Hortenſis*, and varieties, has alſo large, ſimple, decompound leaves, which are digitate or fingered, but the diviſions are not ſo deep, and the fingers or ſegments being broader than thoſe of the former, it is called Broad-leaved Anemone.

The flower-ſtalk of both ſpecies, and reſpective varieties, riſe between the leaves directly from the roots, frequently two, three, or more, from the ſame root, and obtain from about eight or nine to ten or twelve inches in height, and a little above its middle grows a leafy appendage, called the involucrum, and at top ſtands one large conſpicuous flower, which, in ſome varieties, is as large as a double roſe. In their ſingle ſtate the flowers have only ſix or nine petals, but in the double kinds they are innumerable: ſix large petals compoſe the outward part; in the midſt ſtand numbers of ſmaller ones, in a great many circular ſeries, filling up the body of the flower in a globular tuft, which, by floriſts, is called the thrum.

In the ſingle and half-double kinds riſe a vaſt cluſter of thread-like ſtamina, and in the centre of theſe are the rudiments of the ſeed, formed in a ſmall roundiſh head.

But in the full double flowers, all thoſe parts of fructification are often entirely obliterated by the multiplicity of the petals, ſo that the ſeeds are to be expected principally from the ſingle and ſemi double flowers.

The common ſingle kinds, i. e. with ſix or nine petals, with the cluſter of filaments in the middle, are commonly called Poppy Anemones, from their ſimilarity to a ſingle poppy.

*General Deſcription of the Wood Anemones.*

The third and fourth ſpecies, *Anemone Nemoroſa*, and *Anemone Apennina*, grow wild in woods in this country, particularly the former, which is found plentifully in many parts of the kingdom, in their ſingle ſtate; but the double ſorts of them have been obtained by culture in gardens from the ſeeds of the ſingle kinds.

The roots of both theſe and varieties, are fleſhy, oblong, and irregular; run under the ſurface, and ſend forth many fibres.

The leaves riſe from the root on long foot-ſtalks; they are pretty broad, and divided into three principal parts, and theſe again deeply cut on the edges.

The flower-ſtalk riſes from ſix to eight or nine inches high, having a leafy involucrum, and each ſtalk crowned by one pretty large flower, which, in its ſingle ſtate, have generally ſix pretty broad petals, in two ſeries, with a cluſter of ſtamina, and a head of rudiments of ſeeds in the centre; but the double flowers have innumerable ſmall looſe petals, forming a globular head, and are very pretty.

*Uſe in Gardens of all the Sorts.*

The two firſt ſpecies, and their numerous train of varieties, are very pretty ornaments for the flower-garden, and the double kinds have ſuperior beauty; the varieties in general are curious furniture for embelliſhing the fronts of the principal compartments of the pleaſure ground, as they will proſper in the common open borders, &c. in which they have a fine effect, when properly diſpoſed in aſſemblage with plants of ſimilar growth and times of flowering, for they blow freely in any common light earth, and nothing injures them but overabundant moiſture of ſoil; and ſometimes late froſts in April and May deface the thrum that compoſe the middle of the flower, but this is ſeldom.

However, as the capital ſorts are often procured at a great price, and ſome are of ſingular beauty, it is eligible to plant the beſt of them ſeparate in narrow beds, in order, that when the plants begin to ſhew bloom, they may be arched over to be covered with garden mats, when cutting winds and froſts prevail.

But I ſhould adviſe to plant many of the common kinds in the open borders, towards the front, in ſmall cluſters, of three, four, or five in each; in which order the flowers will be very ſhowy, and produce a fine variety for ſix weeks or two months.

The principal ſeaſon of flowering of all the double varieties is April and May, but by planting the roots at different times in autumn and ſpring, the bloom may be continued from March until the middle of June.

The broad-leaved kinds are generally the hardieſt blowers, and if ſome are planted late in March, in a ſomewhat ſhady border, they will exhibit a bloom in July.

All the choice double kinds ſhould be taken up annually when the flower is paſt, in order to ſeparate the encreaſed parts or offſets which ariſe from the ſides of the main roots, and which, if taken up juſt after the flower fades, may be retained out of ground

ſeveral

ſeveral months, and planted according to the time you deſign they ſhall blow.

The Single or Poppy Anemone comes very early into bloom, often in January and February, and its flower, though compoſed but of ſix petals, is large and ſhowey, and is worthy of a place in the common borders, which, if diſpoſed four or five together in patches, alternately with bunches of ſnow-drops, crocuſſes, winter aconites, hepaticas, and Chriſtmas roſes, they will exhibit a fine variety at an early ſeaſon, and the roots may be permitted to remain two or three years unremoved.

The Wood Anemones are fine furniture for the borders of wood-walks, the fronts of ſhrubbery clumps, and for wilderneſs works, and in ſhort, for any other compartments where a variety of early bloom is required, for they will ſucceed any where.

*Method of Planting the Garden Kinds.*

The roots of all the varieties of the two ſpecies of Eaſtern or Garden Anemone, are ſold by the nurſerymen, and at moſt of the ſeed-ſhops. The fine double varieties are generally imported from Holland, which are ſold by the hundred, &c. The common kinds, both double and ſingle, by the pound weight.

The Dutch ſorts are per hundred from eight or ten ſhillings to ſo many guineas, which however is more than they are worth.

The common double Engliſh kinds are ſold per lb. from five to ten or twelve, and the ſingle or Poppy Anemonies from three to five ſhillings.

The ſeaſon for planting all the above varieties, is according to the time it is deſigned they ſhall flower.

The beſt time to plant the principal ſorts for the general bloom is October, or early in November, and the plants will come into flower in April and beginning of May; but if ſome are planted in the middle of September, and a ſecond parcel towards the middle or latter end of October, both plantations will afford a ſucceſſion of bloom from the beginning of April until the middle of May; and if a third plantation is made in February or beginning of March, they will come into flower about the middle of May, and continue until the middle of June, whereby the bloom may be continued near three months.

In reſpect to the above times of planting theſe roots, obſerve, that thoſe planted early in autumn come up in leaf before Chriſtmas, and they always produce the largeſt flowers, and continue longeſt in beauty; the roots too will be better nouriſhed, and afford a larger encreaſe than thoſe planted in ſpring.

It is however neceſſary always to retain ſome out of ground till ſpring, for the ſake of a ſucceſſion of bloom.

The ſituation proper for the Anemone ſhould be free from copious moiſture, and the expoſure ſhould be open to the ſouth ſun and free air, and unincumbered by the ſhade of trees, which ſhould be particularly obſerved for the blow of the capital kinds.

In regard to ſoil, the Anemone will proſper and flower in tolerable perfection in any common moderately light earth of a garden, only obſerving to avoid planting them in over-moiſt and ſtiff ſoils, which would rot the roots in winter; and if any augmentation is neceſſary to raiſe or form the beds or borders for their reception, no more is needful than common light mould from the quarters of the kitchen garden, or any other well-wrought garden earth, working the whole one good ſpade deep.

Profeſſed floriſts, however, in order to blow the capital ſorts in their ultimate ſtate of beauty, often prepare compoſts of different ingredients wherewith to form beds for the reception of the roots.

The beſt is that of freſh earth from a paſture, neats dung, and ſea-ſand. Take maiden loamy earth from the ſurface of a common or other paſture field, the top-ſpit turf and all; to every load of this add one of neats dung, and half a one of ſea or drift-ſand; blend the whole together, and form it in a ridge, in which let it remain a year at leaſt, turning it over every two or three months; (ſee COMPOSTS.) But in default of paſture earth, a good compoſt may be formed of common light garden mould, and rotted neats dung, adding to every load of the former half a one of the latter, and about a quarter of that of driſt or ſea-ſand; and of either of which compoſts the bed is to be formed, about twelve or fifteen inches in depth, and three and a half broad.

The mode of planting is to be obſerved according to the following rules.

If it is deſigned to plant any of the common double and ſingle kinds in the borders, in aſſemblage with other plants, I ſhould adviſe to plant them in patches, that is, to plant three, four, or five roots together, in a patch of five or ſix inches breadth, putting them two or three inches deep; and thoſe

patches

patches may be five, ten, or fifteen feet diſtance, ſome near the edge, others more towards the middle; in which order they will make a pretty appearance.

But when it is deſigned to plant them, in the floriſt's way, in beds by themſelves, they muſt be planted in continued ranges, lengthways.

The beds for this purpoſe are to be marked out three feet and half broad, the length at pleaſure, with alleys eighteen inches wide between bed and bed. The beds muſt be worked or prepared one full ſpade, or fifteen or eighteen inches deep; break the earth ſmall, but do not ſift it, obſerving, that to prevent lodgment of wet, and to give the beds a good appearance, as well as to ſhew the flowers to the beſt advantage, it is eligible to elevate them three inches above the common level or general ſurface; but if there is danger of moiſture ſtanding in winter, double or treble that is proper height, working the whole a little rounding, and rake the ſurface ſmooth; then put in the roots.

In each bed plant ſix rows lengthways, the roots at ſix inches diſtance in each row, and two or three inches deep; and when one bed is planted, run over it lightly with the rake, to reform all inequalities, and make the ſurface ſmooth.

The roots being planted, thoſe of the autumn plantation will come up in leaf in November, but as the plants are hardy, nothing is needful to be done till the bloom begins to appear; and then, if you think proper, to beſtow a little care upon the capital ſorts, by arching the bed with hoops, in order to cover the bloom with mats occaſionally, to protect it from cutting black froſts, which often prevail in April.

To produce a very early bloom of any kind of Anemone, plant ſome roots in pots in October, and towards Chriſtmas place them either in a hot-houſe, or upon a common hot-bed, under frames and glaſſes.

*Their Propagation.*

All the varieties are propagated by off-ſets from the root, and new varieties are obtained from ſeed.

But firſt of propagating them by parting the off-ſets.

By off-ſets, all the kinds encreaſe exceedingly every year; ſo the roots of all the capital kinds, at leaſt, ſhould be taken up annually at the decay of the leaf, and the root may be divided or broken into as many pieces or knobs as are furniſhed with an eye or bud, and every ſuch part will readily grow, and produce a flower exactly like that of the parent root the ſpring following; obſerving however, that if they are divided very ſmall, they flower very weak the firſt year; therefore, if you would have ſtrong flowers from the main root, only break off thoſe ſmall ones that are ſlightly affixed thereto; but they ſhould not be thus divided until autumn, or near the time for planting them again.

The time for taking up the roots is in May and June, when the leaf and ſtalk are withered, for then the roots ceaſe to grow for a month or ſix weeks; but if they are permitted to ſtand to put forth freſh fibres again, they ſhould not be removed that ſeaſon.

They ſhould be taken up in dry weather, and ſpread in an airy place out of the ſun, about a week, then cleared from earth, and put up in bags or boxes till the planting ſeaſon arrive.

The above work ſhould always be performed annually to the capital kinds, both for the ſake of increaſe, and to freſh dig and prepare the beds.

By propagation by ſeed all the beautiful varieties were, and continue annually to be obtained.

The proceſs is not very tedious, for the plants will flower the ſecond or third year.

The ſeed may be had at the ſhops; but if you ſave it yourſelf, it ſhould be from the beſt ſingle or ſemi-double flowers; the full doubles afford none. The time to ſow it is March, either in boxes, large pots, or wide earthen pans, of perfectly light compoſt, or in a bed of ſuch earth; ſow it moderately thick, and cover it near a quarter of an inch deep with ſifted mould: from this time occaſional ſhade from the ſcorching ſun, and moderate waterings in dry weather is neceſſary, and in ſix weeks the plants will appear, keeping them clear from weeds; and when the leaves decay, ſift a quarter of an inch of earth over the bed, which is all that is neceſſary till the ſecond ſummer, when they are to be taken up at the decay of the leaf, and managed as the old roots in the manner already directed, and next ſpring they will flower and diſcover many new beauties, and among them many that are very ordinary, which will do for the common borders.

The propagation of the Wood Anemone is by dividing the roots any time after the decay of the leaves in June until October, though the ſooner after the fall of the leaf the better.

At which time the common ſorts may be tranſplanted from the woods.

The other ſpecies of leſs note are,

[1]ANEMONE *Virginiana.*

*Virginian Wood Anemone.*] Anemone with a branching ſtalk, producing long alternate flower-ſtalks, ſmall whitiſh flowers, and cylindrical ſpikes of hairy ſeeds.

[2]ANEMONE *Dichotoma.*

*Forked-ſtalked Canada Anemone.*] Anemone with a forked ſtalk, trifid cut leaves, ſitting cloſe, growing oppoſite, and embrace the ſtalk.

The firſt grows a foot high, the other almoſt double that height; the flowers are white, ſmall, and of no great beauty. They may be raiſed from ſeed, or by dividing the roots.

*Second Diviſion of Anemone.*

ANEMONE-PULSATILLA, the *Pulſatilla* or Paſque-Flower.

Claſs, order, and characters, the ſame as the Anemone.

The *Pulſatilla* has been always conſidered as a diſtinct genus, till the Linnæan botany juſtly declared all the ſorts ſpecies of the Anemone.

The plants are herbaceous, hardy perennials, of the flowery tribe, that produce annual ſtalks ten or twelve inches high, each ſurmounted by one large flower, bearing great reſemblance to thoſe of the Anemone kind, which make a good appearance in the common borders.

The ſpecies are,

[1]ANEMONE-PULSATILLA *Vulgaris.*

*Common large Pulſatilla or Paſque-Flower.*] Anemone-Pulſatilla with divided and ſub-divided pinnated leaves, having a leafy involucrum, nodding flower, and erect petals.

*Varieties of this are,*] Common Pulſatilla with ſingle blue flowers ——with double blue flowers —— with ſingle and double white flowers —— with ſingle and double red flowers——with violet-coloured flowers —— and with flowers having fringed petals.

[2]ANEMONE-PULSATILLA *Patens.*

*Spreading-flowered Siberian Pulſatilla.*] Anemone-Pulſatilla with digitate, many-pointed, downy leaves, and upright pale yellow flower with ſpreading petals, and deep yellow ſtamina, and with the involucrum at a diſtance from the flower.

[3]ANEMONE-PULSATILLA *Vernalis.*

*Early Smallage-leaved Alpine Pulſatilla.*] Anemone-Pulſatilla with ſimply pinnated leaves, and erect bright yellow flowers.

The plants are perennial in root, but annual in leaf and ſtalk, which come up in ſpring, and periſh in June or July, when they have flowered and perfected ſeeds.

The roots are long, thick, fleſhy, and of downright growth.

The leaves riſe immediately from the root, on foot-ſtalks, and are decompounded into many very narrow ſegments.

The flower-ſtalk riſes annually between the leaves, eight, ten, or twelve inches in height, often ſeveral from the ſame root; near the top of each is the leafy many-pointed involucrum, ſerving as a kind of flower-cup, and at top ſtands one large bell-ſhaped flower, in magnitude equal to a large ſingle Anemone, is compoſed of ſix petals, in two ſeries, with a cluſter of ſtamina in the middle; but in the double flowers the petals are numerous.

They flower in March and April, and the ſeeds ripen early in autumn.

The Common Pulſatilla grows wild on hills, heaths, and dry paſtures in Britain, and other parts of Europe, and the others are natives of the Siberian and Alpine mountains, but they have been long inhabitants of many curious gardens.

The plants are good furniture for the common borders, particularly the firſt ſpecies and reſpective varieties, and they proſper any where.

The propagation of all the three ſpecies is effected by ſeed, and by dividing the roots. The ſeed ripens in July, and may be ſown ſoon after, or early in ſpring, in a bed of light earth.

The propagation by roots is this: take up ſome of the large roots in July, when their leaves decay, or even any time till October, and ſuch of them that are grown into heads, may be divided into as many parts as have a bud or head at top, which plant, and they will each flower the following ſpring.

The proper time of year to remove thoſe roots, is any time from the decay of the leaf until Michaelmas.

The roots do not bear to be kept long out of ground.

*Third and laſt Diviſion of Anemone.*

ANEMONE-HEPATICA, the Hepatica, or Noble Liverwort.

Claſs, order, and characters, the ſame as the Anemone. See ANEMONE.

As the Hepatica, in point of general habit, having been always conſidered as very different from the Anemone, we, for the greater facility of diſtinction, treat of it in a ſeparate diviſion, obſerving however that the whole flower,

flower, though conſiderably ſmaller, poſſeſſes all the characters of the Anemone; although it was long conſidered as a diſtinct genus, principally from the trefoliate appendage ſituated near the flower, being miſtaken for a calix or cup; but Linnæus conſiders that only as a three-leaved involucrum, common to all the Anemone kind, for there is no calix. See the *Characters*.

There is but one ſpecies of Hepatica, of which are many varieties, all very low, herbaceous, flowery perennials, that adorn our gardens in early ſpring, each with a large tuſt of numerous flowers.

The ſpecies is,

ANEMONE-HEPATICA, *Hepatica*.

*The Hepatica.*] Anemone with leaves compoſed of three roundiſh undivided lobes, and the involucrum ſituated near the flower.

*Varieties of this are,*] Hepatica with ſingle and double blue flowers ——with ſingle and double red flowers ——with ſingle and double red and white flowers ——with violet-coloured flowers ——with ſingle and double white flowers—and Hepatica with ſtriped leaves.

Theſe plants form themſelves into low roundiſh bunches; the whole, including leaves, flower-ſtalks, and flowers, never exceed five or ſix inches in height, which are annual, but the root is of many years duration.

The root is thick, formed into heads, and hath numerous matted fibres.

The flowers appear before the new leaves, but thoſe riſe immediately after, the whole riſing directly from the root; the flower-ſtalks are ſlender, four or five inches high, and riſe in great numbers, each ſupporting one ſmall flower, which, in its ſingle ſtate, hath ſix petals; but theſe are numerous in the double flowers, and in all the varieties, they ſtanding in vaſt cluſters make a beautiful appearance in February, March, and April, ſucceeded in the ſingle kinds by plenty of ſeed in ſummer.

All the varieties are choice furniture to adorn the fronts of borders, and other compartments contiguous to the habitation.

The double kinds have the greateſt merit, the flowers being larger, and continue longer in bloom, and ſhould occupy the moſt conſpicuous places; but as theſe can only be encreaſed by dividing the roots, which being remarkably ſlow of growth, are not ſo eaſily acquired as the ſingle kinds, which may be raiſed plentifully from ſeed.

The propagation of the ſingle kinds is effected both by ſeed and parting the roots, but the double ſorts only by the latter method.

Obſerve however, that from ſeed of ſingle flowers double ones are often obtained.

The ſeed may be ſown in Auguſt, September, or March, in a bed or border of light earth, covering it hardly a quarter of an inch deep, and the plants will appear in April and May; give occaſional water and weeding, and in Auguſt or September prick them upon a border open to the morning ſun, where they will flower in ſpring, and in a year after tranſplant them where they are to remain.

Thoſe plants being very ſlow in growth, it will be three years before they form large bunches, ſo as to produce tolerable cluſters of flowers.

The propagation by parting the roots is performed in ſpring; divide each root into two, three, or more parts, but not too ſmall, becauſe of their reluctant growth; for the merit of the plants is to have them form large bunches, capable of producing fifty or ſixty flowers on the ſame root, which, ſtanding in a compact cluſter, make a beautiful appearance.

The ſeldomer theſe plants are removed, the ſtronger and more numerous will be their flowers.

ANETHUM, Dill, Fennel, and Finochia.

The plants are herbaceous; there are three ſpecies, all well known umbelliferous herbs of the kitchen garden.

Claſs and order, *Pentandria Digynia*.

*Characters.*] CALIX, the flowers are umbellated, and the umbels are compound, have neither calix nor involucrum. COROLLA, the general umbel is uniform, and the florets of the umbel have each five petals. STAMINA, five filaments, and roundiſh antheræ. PISTILLUM, a germen under each floret, two ſtyles, and obtuſe ſtigmas. PERICARPIUM none, and the ſeeds are two ſucceeding each germen.

The ſpecies are,

[1]ANETHUM *Graveolens*.

*Common Dill, or Rank Anethum.*] Anethum with finely divided leaves, and compreſſed ſeeds, having borders.

[2]ANETHUM *Fœniculum*.

*Common Fennel or Finckie.*] Anethum with decompound leaves, the lobes finely divided, ending in many points, and oval ſeed.

*Varieties*

*Varieties of this.*] Common light-green-leaved Fennel.—Dark-green-leaved Fennel.—Sweet Fennel, with long ſlender ſparſed leaves, and white ſweet ſeed.

[3]ANETHUM *Azoricum.*

*Azorian Dwarf Fennel, or Finochio.*] Anethum with a dwarf ſtalk, ſwelling, and fleſhy near the root, and recurved ſeed.

Theſe plants are all of hardy growth; the Dill and Finochia are univerſally annual; the Fennel and its varieties are annual in leaf and ſtalk, but have perennial roots. The roots are univerſally ſpindle-ſhaped, and grow downright; the leaves are decompound, with the lobes finely divided into numerous, minute, thread-like ſegments; and the flower or ſeed-ſtems riſe from one to five feet high, terminated by the umbels of flowers, ſucceeded by plenty of ſeed in Auguſt and September.

The Dill riſes with a few ſlender leaves, and a ſlender erect ſtem, two or three feet high, the heads or umbels of which, when the ſeeds are formed, are the parts uſed in the kitchen for cucumber pickle, &c. and the ripe ſeeds for medicine.

The *Anethum Fœniculum*, and varieties, hath thick, fleſhy, downright roots, which, after the firſt year, ſend up a great tuft of large leaves, and ſtrong erect ſtems, four or five feet high, dividing into many branches. The leaves are the parts uſed in the kitchen for mackerel, pickled-ſalmon, garniſh to diſhes, &c. therefore, the ſtems of a few plants ſhould be cut down as they advance in ſummer, to procure a ſupply of young leaves from the bottom; but for medical purpoſes, the root, leaves, and ſeed are uſed.

The *Finochio* is a ſallad herb. The plant hath a ſhort robuſt ſtalk, the bottom of which ſwells like a large flat turnip, and this being rendered white and tender by blanching, is the part uſed, which is eaten raw, being ſliced and reliſhed with vinegar, oil, pepper, &c.

*Propagation, Culture, &c.*

They are all propagated by ſeeds, which, of the Dill and Finochio, muſt be ſown annually, becauſe the plants endure but one year.

The Dill and Fennel may be ſown either in autumn or ſpring; the autumn ſowing generally riſe ſtrongeſt, and ſhould be ſown where they are to remain, eſpecially the Dill; they require no particular ſoil or expoſure; ſow the ſeed broad-caſt thinly on the ſurface, and rake it in, and in May or June the plants muſt be thinned by hand or hoe, the Dill to ſix or eight, and the Fennel to twelve or fifteen inches diſtance.

As the Fennel is of ſeveral years ſtanding, it may, for the ſake of regularity, be either ſown as above, or in drills a foot aſunder.

Theſe two ſpecies are remarkable for riſing abundantly from the ſelf-ſown ſeeds, often ſufficient for private ſervice.

The Fennel may alſo be encreaſed by ſlipping the large roots, which frequently divide themſelves into heads; but theſe do not ſucceed ſo well as the ſeedling plants.

The Finochio is ſown in the middle of March, or beginning of April, and to continue a ſucceſſion till winter, repeat the ſowings every month until July. Chuſe an open ſpot of rich light ground, and by line and hoe draw ſhallow drills, two feet diſtance; ſcatter the ſeeds thinly along the bottom, and cover them near a quarter of an inch deep with finely broken mould, and when the plants are an inch or two high, ſmall hoe them to kill weeds, and thin them to three inches, and in two or three weeks after cut them out to treble that diſtance, that the baſe of the ſtem may have room to ſwell.

When the ſtalks are conſiderably ſwelled at bottom, earth them up on each ſide, and in two or three weeks that part will be very white and tender.

ANGELICA.

This genus furniſhes four herbaceous perennials, of large and vigorous growth, obtaining four or five feet ſtature, branching ſtrongly, garniſhed with large pinnated leaves, and ſurmounted by numerous flowers, collected into conſiderable umbels.

Claſs and order, *Pentandria Digynia.*

*Characters.*] CALIX, the flower is umbellate, and the umbel is compound; the general umbel has a five, and the partial umbel an eight-leaved involucrum, and the calix of the florets is ſmall and five-parted. COROLLA, the umbel is uniform, and each floret has five petals. STAMINA, five filaments, and ſimple antheræ. PISTILLUM, a germen under each floret, two reflexed ſtyles, and obtuſe ſtigma. PERICARPIUM none, the ſeeds are two, ſucceeding each germen.

The ſpecies are,

[1]ANGELICA *Sativa.*

*Cultivated, or Garden Angelica.*] Angelica with leaves compoſed of lobes, unequal in ſize and number.

[2]ANGELICA *Sylveſtris.*

*Wild Engliſh Angelica.*] Angelica with leaves compoſed of equal ſpear-ſhaped ſerrated lobes.

[3]ANGELICA *Lucida.*

*Shining Canada Angelica.*] Angelica with ſhining leaves, compoſed of equal oval lobes, the edges cut and ſerrated.

[4]ANGELICA *Atropurpea.*

*Dark-purple Canada Angelica.*] Angelica with blackiſh-green pinnated leaves, having the extreme pair of lobes joined.

All theſe plants are perennial in root, but the leaves and ſtalks are renewed annually in ſpring.

The roots are branching and fibrous.

They ſend up robuſt and ſtrongly branching ſtalks, four or five feet high, adorned with large pinnated leaves, compoſed of ſeveral large lobes, and the ends of all the ſtalks and branches are terminated by large compound umbels of flowers, ſucceeded, in all the ſpecies, by abundance of ſeed in Auguſt and September.

The Garden Angelica is in great requeſt for its efficaceous properties in medicine; and of its young tender ſtalks in May, cut into many pieces, is made an admirable ſweetmeat. As a garden plant it is ſometimes admitted in large pleaſure grounds, to encreaſe the variety, where it cuts a tolerable figure, with its large branching head, conſiderable foliage, and vaſt umbels of flowers.

The *Angelica Sylveſtris* grows wild by river ſides and moiſt places, and having little merit, is rarely admitted in gardens, unleſs merely for obſervation.

The two Canada ſpecies poſſeſs little virtue or beauty; but being foreigners, and for the ſake of variety, are allowed places in many of our gardens, in large grounds, where many plants of eaſy culture are required.

All theſe plants delight in moiſture, but they rarely diſdain any ſoil or ſituation.

*Propagation.*

All the ſorts may be raiſed with facility from ſeed, in a bed or border of common earth.

The time of year to ſow them is either in autumn, i. e. September or October, or early in ſpring, obſerving the autumn ſowing generally riſe ſtrong and regular in ſpring following, and thoſe ſown in ſpring ſometimes riſe ſtraggling, ſo ſhould be ſown conſiderably thicker.

The method of ſowing this ſeed is by broad-caſt on the ſurface, and rake it in.

When the plants are four or five inches high, tranſplant them into a bed or border of moiſt earth, fifteen or eighteen inches diſtance, and give occaſional waterings; and if any are required in the pleaſure ground for variety, tranſplant them from the above bed in ſpring following.

Theſe plants produce only leaves the firſt year; the ſecond they ſhoot up ſtalks, flower, and perfect ſeeds.

Obſerve, that when the firſt ſtems of thoſe plants are permitted to perfect ſeeds, the roots frequently periſh in winter, in which caſe a ſupply muſt be raiſed annually; but if the ſtems are cut down in June, it encreaſes the root, and it will ſurvive ſeveral years.

ANNONA, *Guanabus*, or Cuſtard-Apple, and Papaw-Tree.

The plants are of the tree and ſhrub kind; there are ſeven or eight ſpecies, one of which is a hardy deciduous ſhrub, the others moſtly ever-green, and of the ſtove temperament; all the ſorts are adorned with ſimple leaves, and bear large roundiſh and oblong fruit.

Claſs and order, *Polyandria Polygynia.*

*Characters.*] CALIX, five heart-ſhaped leaves. COROLLA, ſix petals, the three outermoſt the largeſt. STAMINA, the filaments hardly viſible, but numerous antheræ. PISTILLUM, a roundiſh germen placed under the flower, inviſible ſtyles, having many obtuſe ſtigma. PERICARPIUM, a large, oblong, oval fruit, of one cell, containing many oval hard ſeeds.

The ſpecies of moſt note are,

[1]ANNONA *Reticulata.*

*Netted-fruited Annona, or Cuſtard-Apple.*] Annona with ſpear-ſhaped pointed leaves, and large, conical, orange-coloured fruit, having a netted rind.

[2]ANNONA *Muricata.*

*Prickly-fruited Annona, or Sour-Sop.*] Annona with oval, ſpear-ſhaped, plane, ſmooth, ſhining leaves, and large oval, greeniſh-yellow, prickly, ſour fruit.

[3]ANNONA *Squamoſa.*

*Scaly-fruited Annona, or Sweet-Sop.*] Annona with oblong-pointed leaves, and ſmall oval, obtuſe, ſcaly, ſweet fruit.

[4]ANNONA *Paluſtris.*

*Marſh Annona, or Water-Apple.*] Annona with oblong, obtuſe, ſmooth, odoriferous leaves, and round ſmooth fruit.

[5]ANNONA *Cherimola.*

*Cherimola Broad-leaved Annona.*] Annona with broad, ſmooth, ſhining leaves, and oblong,

oblong, ſcaly, purple fruit, having a ſoft ſweet pulp.

6 ANNONA *Triloba.*

*Three-fruited Annona, or Papaw-Tree.*] Annona with large ſpear-ſhaped leaves, and inverted pear-ſhaped fruit, growing by threes on each foot-ſtalk.

Theſe trees are natives of America, the firſt five ſpecies that of the warmeſt parts; they are ever-green, and require the conſtant aid of a ſtove in this country. But the ſixth ſort is a hardy deciduous ſhrub, that proſpers here in the full air.

In America, the firſt five ſpecies obtain twenty or thirty feet ſtature, garniſhed with beautiful large leaves, which are univerſally ſimple, and ſtand alternate; and flowers proceeding ſingly from the ſides of the branches, ſucceeded by large fruit, full of a ſoft pulpy ſubſtance, in ſome very ſweet and palatable, that of the *Annona Reticulata* being of the texture of a cuſtard, whence it, in America, derived the appellation of Cuſtard-Apple.

Theſe five ſpecies however never produce fruit in Europe, and rarely flower, ſo are retained here in ſtoves by the curious for variety, and the beauty of their ever-green leaves.

The *Annona Triloba* or Hardy Papaw, is of North America; it riſes twelve or fifteen feet high, the leaves very large and alternate, and the flowers are of a chocolate colour, which ſometimes appear here in May, but never any fruit.

*Propagation, Culture, &c.*

All the ſorts are propagated by ſeed.

The ſeeds are imported from America by many of the London ſeedſmen, &c. they are to be ſown as ſoon as they arrive; thoſe of the tender kind in pots of light rich earth, and plunged in a bark-bed under glaſſes; and when the plants are three inches high, prick them in ſeparate pots, give water, and plunge them in the bark-bed in the ſtove, where they muſt be always retained and treated as other woody plants of that department.

The ſeeds of the hardy Annona may either be ſown in a bed of common light earth, or in pots or boxes, which latter, at the approach of winter, may be moved into the greenhouſe, or ſhelter of a frame, for the plants are impatient of ſevere froſt whilſt young, ſo the ſeedlings ſhould be planted in pots to have occaſional ſhelter the firſt two or three winters, then turned out into the full ground.

If the plants do not riſe the firſt year, plunge the pots upon a hot-bed in ſpring.

ANTHEMIS, Chamomile.

This genus furniſhes upwards of twenty ſpecies of herbaceous plants, conſiſting of annuals and perennials; of which not more than five or ſix merit notice, either for uſe or ornament.

Claſs and order, *Syngeneſia Polygamia Superflua.*

*Characters.*] CALIX is hemiſpherical and ſcaly. COROLLA, a compound radiated flower, the diſk or middle compoſed of funnel-ſhaped hermaphrodites, and the radius of flat female florets. STAMINA, five filaments in the hermaphrodite flowers. PISTILLUM, a germen, ſimple ſtyle, and two reflexed ſtigmas. PERICARPIUM none, the ſeeds ſit naked on the receptacle.

The ſpecies of note are,

1 ANTHEMIS *Nobilis.*

*Noble or Common Chamomile.*] Anthemis with pinnated leaves, compoſed of numerous minute, acute-pointed, ſomewhat hairy ſegments.

*Varieties.*] Common Chamomile with ſingle white flowers —with double white flowers —with very large double white flowers.

2 ANTHEMIS *Maritima.*

*Maritime or Sea Chamomile.*] Anthemis with pinnated, fleſhy, indented, dotted, naked leaves, trailing branching ſtalks, and white flowers.

3 ANTHEMIS *Tomentoſa.*

*Downy Grecian Sea Chamomile.*] Anthemis with pinnated, plane, obtuſe, many-pointed, downy leaves, branching ſtalks, and white flowers.

4 ANTHEMIS *Tinctoria.*

*Tinctorated Ox-eye Anthemis.*] Anthemis with tall erect ſtalks, doubly-pinnated ſawed leaves, woolly underneath, and large flowers growing in a corymbus.

*Varieties.*] Common German Ox-eye Anthemis with white flowers.——Great Oriental Ox-eye Anthemis with ſulphur-coloured flowers —— with yellow flowers —— with ſcarlet flowers ——with pale red flowers—— and with large white flowers.

5 ANTHEMIS *Pyrethrum.*

*Pyrethrum or Pellitory of Spain.*] Anthemis with trailing branches, pinnated, finely divided leaves, and each branch terminated by one large flower.

All theſe are hardy perennials, cloſely adorned with numerous pinnated leaves,

finely divided into a multitude of minute parts, and compound radiated flowers, but the radius is not diſtinct in the double kinds.

The *Anthemis Nobilis* is the Odoriferous or Common Chamomile, well known for the medical virtues of its flowers, which are equally efficacious in all its varieties, and the plants merit culture in every garden. The two double kinds merit culture alſo as flowering plants; the common double ſort is well known; its flowers, though ſmall, are perfectly full and pretty; but the large double kind is almoſt three times as big, and are very beautiful.

They are low trailing plants, ſpreading themſelves upon the ſurface of the earth; their branches emitting roots as they advance, and multiply exceedingly, and produce numerous flowers in June, July, and Auguſt, or even till October.

The *Anthemis Maritima* and Downy Anthemis are low, buſhy plants, and produce numerous flowers from July until November, and may be admitted to form variety in the compartments of pleaſure grounds.

The *Anthemis Tinctoria* and varieties are ſpreading plants, and ſend up branching ſtems a yard high, ornamented with corymbuſes of flowers from June until November, and make a good appearance in the ſhrubbery compartments.

The *Pellitory of Spain* hath a carrot ſhaped root, and branches ſpreading a foot each way on the ground, producing large ſolitary flowers in June and July.

The root of this ſpecies afford relief in the tooth-ach.

*Propagation, &c.*

The Common Chamomile and varieties are propagated by parting the roots, and by ſlips and cuttings of their trailing branches.

The beſt ſeaſon for this is March and April, although it may be done in any of the ſummer months. Thoſe intended for medical uſe muſt be planted in a bed or border, in little tufts, nine inches or a foot aſunder; give ſome water, and they will ſoon ſpread and produce plenty of flowers the ſame year.

If the double ſorts are deſigned as flowering plants, ſet them in little bunches in different parts of the borders.

The other four ſpecies are eaſily raiſed from ſeed, in a bed of common earth, in March and April; likewiſe by ſlips and cuttings of their branches, in a ſhady border, any time in ſummer; afterwards tranſplant them into the fronts of ſhrubberies, where they will endure many years, and flower annually.

To this genus belong alſo all the Mayweeds of the fields, having leaves ſomewhat like Chamomile, and white radiated flowers, with yellow middles.

ANTHERÆ, the Apex, Summit, or Top of the Stamina, or Stamen of Flowers, and is elevated by means of the filaments. See STAMEN and FILAMENTUM.

This part of the flower, i. e. Antheræ, is of the utmoſt utility in the generation of plants; for, according to the ſexual ſyſtem, it is the principal part of the male organs, and contains the fecundating *pollen*, or fine and coloured duſt, abſolutely neceſſary for the impregnation of the female parts of the fructification of flowers, to render them prolific or fruitful, and to fertilize the ſeeds, which otherwiſe would prove abortive.

The ſexual ſyſtem being founded on the ſuppoſed impregnation of the ſeeds by the male duſt or powder contained in the Antheræ, the importance of that part of the flower is conſiderably augmented. See SEXUS.

The Antheræ produces, and, when ripe, diſcharges a powder called *pollen*, which falling upon the ſtigma, or female organ, is abſorbed by a tough and viſcid humour, with which the ſurface of that part is covered, and paſſing from thence through the ſtyle, impregnates the germen or ovarium below (ſee STYLUS and GERMEN;) and after this operation of nature, the fruit or ſeed immediately take their growth, which, in ſome plants, is very quick and conſpicuous, particularly exemplified in the cucumber; as I have often obſerved, that from the time of impregnating the female flower with the Antheræ of the male bloſſom, which I always practiſe to the early crops, that the fruit, from the ſize of a large barley-corn, have obtained four, five, or ſix inches in length in a fortnight; the cucumber and melons being androgynous plants, i. e. produce male and female flowers apart on the ſame root, that the office of fecundating the fruit naturally, is ſuppoſed to be accompliſhed in the general ſummer crops in the full ground, by the winds or inſects, ſuch as bees, flies, &c. conveying the male duſt, and ſhedding it over the ſtigma or pointal of the female flower; but in the early crops in hot-beds, under frame and glaſſes, where we may ſuppoſe the winds and inſects have

have no acceſs, recourſe is had to art, to perform the office of impregnation, or, as the gardener's call it, ſetting the fruit, which is effected by carrying the ſtamina of the male, commonly, though improperly, called the falſe bloſſom, to the female, and touching the ſtigma therewith, ſo as to leave part of the duſt of the Antheræ, and in a day or two after the fruit will viſibly ſwell. See the *Culture of Cucumbers*.

The above operation of impregnating cucumbers with the Antheræ of the male bloſſom is ſo eſſential, that I adviſe every one to practiſe it with the utmoſt attention in the early crops, as from many years experience I can affirm it to be of the greateſt importance, for I always made ſure of my firſt fruit, and even every one that ſhewed and bloſſomed; whereas, when left entirely to nature, in the early crops, ſeldom one in ten or twenty ſtands; but when the ſeaſon arrives that the plants can be expoſed to the free air, that function is always ſufficiently effected, as above obſerved, by the winds, inſects, &c. or by ſome other unknown operation of nature. *Vide* CUCUMIS, IMPREGNATION OF FRUIT, SEXUS, &c.

The moſt natural ſtructure of the Antheræ, which obtain in the greater number of plants, is, in point of ſituation, placed on the top of the filament; in point of number, a ſingle Antheræ to each filament, though ſome plants have two, others three, four, and five Antheræ.

The connection of the Antheræ with the filament is either *Erectæ*, erect, or ſtrait, and faſtened by either end to the top of the filamant; *Incumbentes*, incumbent, or lie ſideways upon the filament; or *Verſatiles*, veering about like a vane.

The figure and reſemblance of the Antheræ is various, ſome are *Linearis*, linear, or ſlender, like a thread; *Subulata*, or awl-ſhaped; *Haſtata*, ſpear, or javelin-ſhaped; *Bicornes*, two-horned; *Bifida*, parted halfway; *Biloba*, divided into two; *Sagittata*, arrow-ſhaped; *Cordata*, heart-ſhaped; *Reneformis*, kidney-ſhaped; *Ovata*, egg-ſhaped, *Globoſa* or *Rotunda*, globular or round; *Trigona*, three cornered; *Tetragona*, four cornered; *Lunalata*, creſcent, or moon-ſhaped; *Acuta*, ſharp, terminated in an acute angle; *Acuminata*, tapering to a point; *Obtuſa*, obtuſe, or blunt; *Diſtincta*, diſtinct, or unconnected with each other; *Connivens*, approaching each other; *Incurva*, bowed, or crooked; *Villoſa*, hairy and woolly; *Hirſuta*, rough and hairy; *Membranacea*, membranaceous or hard, like parchment; *Pellucida*, ſhining or tranſparent.

ANTHERICUM, Spider-Wort.

The plants are herbaceous, moſtly perennial, and of the flowery kind, obtaining in ſtature, in different ſpecies, from three inches to three feet, adorned with hexapetalous liliaceous flowers, diſpoſed in ſpikes.

Claſs and order, *Hexandria Monogynia*.

*Characters.*] CALIX none. COROLLA, ſix obtuſe ſpreading petals. STAMINA, ſix filaments, and incumbent furrowed antheræ. PISTILLUM, a trigonous germen, ſimple ſtyle, and trigonous ſtigma. PERICARPIUM, a ſmooth three-furrowed capſule, of three cells, containing many ſeeds.

There are twelve ſpecies, thoſe that claim attention are,

[1]ANTHERICUM *Revolutum*.

*Revolute-flowered Anthericum.*] Anthericum with flat rough leaves, erect branching ſtalks, two feet high, each branch terminated by a looſe ſpike of white flowers, having the petals rolled back.

[2]ANTHERICUM *Ramoſum*.

*Ramoſe-ſtalked plane-flowered Anthericum*] Anthericum with flat leaves, erect very branching ſtalks, two feet high, each branch terminated by a looſe ſpike of white flowers, with ſtrait petals.

[3]ANTHERICUM *Liliago*.

*Liliago or Single-ſtalked Anthericum.*] Anthericum with plane flat leaves, an erect unbranched ſtalk, a foot and half high, ſupporting one looſe ſpike of white flowers.

[4]ANTHERICUM *Liliaſtrum*.

*Liliaſtrum, or St. Bruno's Lily.*] Anthericum with plane, flat, erect leaves, erect undivided ſtalk, fifteen or eighteen inches high, and large bell-ſhaped, lily-like, white, odoriferous flowers at top of the ſtalk, hanging on one ſide, which are very pretty, but rarely endure five or ſix days.

[5]ANTHERICUM *Fruteſcens*.

*Shrubby-ſtalked Anthericum, or Onion-leaved Aloe.*] Anthericum with ſeveral ſhrubby-branches from the root, each ſupporting a head of taper, onion-like, fleſhy leaves, and looſe ſpikes of yellow flowers.

[6]ANTHERICUM *Aloeoides*.

*Aloe-leaved Anthericum.*] Anthericum with broad, flat, awl-ſhaped, fleſhy leaves, riſing from the root, ſpreading on the ground, and looſe

looſe ſpikes of yellow flowers riſing among the leaves.

7 ANTHERICUM *Aſphodeloides.*

*Mock-Aſphodel Anthericum*] Anthericum with long, narrow, awl ſhaped, half-tapered, fleſhy leaves, gathered cloſe together, and looſe ſpikes of yellow flowers riſing among the leaves.

The four firſt ſpecies are hardy perennials, the roots are moſtly fleſhy tubers, eſpecially the three firſt; the leaves and ſtems riſe from the root annually in ſpring, flower in June and July, and ripen ſeed in autumn.

All theſe are proper furniture for the principal compartments of the pleaſure ground.

The *Anthericum Fruteſcens*, *Aloeoides*, and *Aſphodeloides*, are green-houſe plants, ſo muſt be retained always in pots; they are ſucculent, and retain their leaves, and flower at different ſeaſons, and often perfect ſeeds.

The flowers of all the ſorts are liliaceous, and compoſed each of ſix equal petals. See its *Characters.*

*Propagation.*

The *Anthericum Revolutum*, *Ramoſum*, and *Liliago*, are propagated by ſeed, in a bed or border of light earth, in September or October, and the plants will riſe plentifully in ſpring; which, in autumn, when the leaves decay, tranſplant into a freſh bed, nine inches diſtance, to remain a year; then remove them into the borders, &c.

The roots ſometimes afford off-ſets, which may be ſeparated for encreaſe in autumn.

The St. Bruno's Lily multiply freely by off-ſets of the roots, which may be divided in autumn, planting the ſmall ſlips in a nurſery bed for a year, and the larger ones at once where they are to remain.

The three green-houſe kinds may be raiſed from ſeed, but they encreaſe exceedingly by off-ſets or ſuckers, which may be taken off in ſummer, and planted in pots of light ſandy earth, and in winter muſt have the ſhelter of a green-houſe or garden-frame, and managed as other ſucculent plants.

ANTHOLYZA, ſometimes called Æthiopean Corn Flag.

The plants are herbaceous perennials, of the bulbous-rooted tribe, producing ſtalks from one to two feet high, ornamented with cluſters of large monopetalous flowers, of ſingular ſtructure and beauty.

Claſs and order, *Triandria Monogynia.*

*Characters.*] CALIX is a ſpathæ. COROLLA, one irregular ringent petal, tubular below, widening gradually to a large compreſſed ringent mouth, the upper lip very long and erect, with two ſhort wings at the baſe; the under lip ſhort and trifid. STAMINA, three long filaments, and pointed antheræ. PISTILLUM, a germen below the corolla, ſlender ſtyle, and trifid ſtigma. PERICARPIUM, a trigonous capſule of three cells, and many ſeeds.

The ſpecies are,

1 ANTHOLYZA *Ringens.*

*Ringent or Gaping ſcarlet Antholyza.*] Antholyza with narrow, rough, furrowed leaves, a foot long; round hairy flower-ſtalk, two feet high, ornamented upward with ſeveral red flowers, having compreſſed jaws and gaping lips.

2 ANTHOLYZA *Spicata.*

*Half-ſpiked White Antholyza.*] Antholyza with long, narrow, deeply-furrowed leaves; a flower-ſtem eighteen inches high, and white flowers, ranged all on one ſide, ſtanding erect.

3 ANTHOLYZA *Æthiopica.*

*Æthiopean Crimſon Antholyza.*] Antholyza with long, narrow, deep-green leaves; a round flower-ſtem a foot high, the top ornamented with large, incurved, crimſon flowers.

4 ANTHOLYZA *Cunonia.*

*Cunonia, or Large Spathæed Scarlet Antholyza.*] Antholyza with narrow, ſword-ſhaped, pointed leaves, nine inches long, riſing in autumn, and the flower-ſtem in ſpring, eighteen inches high, ornamented upward with large ſcarlet flowers, have a large ſpathæ, and want the under lip.

Theſe are exotics of Africa, and require the protection of a ſtove or good green-houſe in winter, ſo muſt be always retained in pots.

They have bulbous perennial roots, but the leaves and ſtems are annual, riſe in ſpring, and flower in May and June; the flowers are elegant, and univerſally monopetalous, long, hollow, divided into ſix irregular ſegments, one of which is conſiderably extended, the whole extremely ſingular and beautiful, and are ſucceeded by plenty of ripe ſeeds in autumn.

Their propagation is by off-ſets from the roots, which may be taken up and ſeparated when the leaves decay.

They may alſo be propagated with facility by ſeeds ſown in autumn, in pots of light earth, which place in the green-houſe in winter, and the plants will appear in ſpring, and in two years tranſplant them into ſeparate pots.

ANTHOSPERMUM, Amber-Tree.

This is a beautiful, evergreen, odoriferous ſhrub, of the green-houſe.

Claſs and order, *Polygamia Dioecia*, i. e. hermaphrodite, and male and female flowers upon one plant, and only males or females upon another.

There are two ſpecies.

[1]ANTHOSPERMUM *Æthiopicum.*

*Æthiopean Smooth Amber-Tree.*] Anthoſpermum with an erect very branching ſtem, and numerous, very ſmall, ſmooth leaves.

[2]ANTHOSPERMUM *Ciliare.*

*Ciliated Cape Anthoſpermum.*] Anthoſpermum with procumbent or trailing ſtalks, eight or ten inches long, and narrow ſpear-ſhaped leaves, having hairy borders.

The *Anthoſpermum Æthiopicum* is the ſort commonly known here; it is a low ſhrub, the ſtem erect, and divides into numerous ſlender branches, cloſely covered with very ſmall, ever-green, fragrant leaves, and flowers from the ſides of the branches, which being devoid of petals, have no beauty; ſo that the merit of the plant is its being a pretty ever-green, of delightful fragrance.

Both theſe ſpecies require the ſhield of a green-houſe in winter, ſo muſt be cultivated in pots.

The propagation of both ſorts is effected by cuttings and layers of their young branches; the cuttings may be planted in May, June, or July, either in pots, or in a bed or border, giving occaſional ſhade, and they will be fit to tranſplant into ſeparate pots in two or three months.

ANTHYLLIS, *Barba Jovis*, or Jupiter's Beard; alſo Silver Buſh.

This genus furniſhes ever-green ſhrubs and herbaceous plants; the former chiefly merit culture, which are exotics of the green houſe, adorned with compound leaves, and papilianaceous, or butterfly-ſhaped flowers.

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX, monophyllous, ſwelling, five-parted, and permanent. COROLLA is papilionaceous, the ſtandard long, both ſides reflexed, the wings and keel ſhort. STAMINA, ten filaments, ſimple antheræ. PISTILLUM, an oblong germen, ſimple ſtyle and ſtigma. PERICARPIUM, a roundiſh pod, having one or two ſeeds.

The ſpecies are,

[1]ANTHYLLIS *Barba Jovis.*

*Common Barba Jovis, or Jupiter's Beard.*] Anthyllis with ſhrubby ſtem and branches, nine or ten feet high, ornamented with winged ſilvery leaves, compoſed of many lobes, and bright yellow flowers in bunches at the ends of the branches.

[2]ANTHYLLIS *Cytiſoides.*

*Baſtard Cytiſus, or Ternate-leaved Spaniſh Barba Jovis.*] Anthyllis with ſhrubby ſtem and branches, two feet high, leaves compoſed of three oval hoary lobes, and yellow flowers, by twos or threes from the ſides of the branches.

[3]ANTHYLLIS *Heterophyllis.*

*Dwarf Portugal Barba Jovis*] Anthyllis with low ſhrubby ſtem and branches, ſpreading near the ground, pinnated ſilvery leaves, terminated by an odd lobe, and ſmall variegated flowers at the ends of the branches.

[4]ANTHYLLIS *Hermaniæ.*

*Cretan Ternate-leaved Barba Jovis.*] Anthyllis with ſhrubby ſtem and branches, riſing five feet high, ternate leaves, and yellow flowers in cluſters from the ſides of the branches.

[5]ANTHYLLIS *Erinacea.*

*Erinacea, or Prickly Anthyllis.*] Anthyllis with ſhrubby and very prickly ſtem and branches, growing ſix or eight feet high, oval ſimple leaves, and purpliſh flowers.

Theſe are all exotic ever-greens of the green-houſe, ſo muſt be always kept in pots for the convenience of moving them in and out occaſionally.

They are natives of Portugal, Spain, Italy, and Greece.

The *Anthyllis Barba Jovis* is a moſt beautiful ever-green ſhrub, although it may be ſaid to be white, for the leaves appear of a ſilvery white colour, hence it is ſometimes called Silver Buſh.

The *Anthyllis Cytiſoides* is alſo a pretty hoary ſhrub.

The other three ſpecies are at preſent but rare in this country.

All the ſorts flower annually in June and July; the flowers are univerſally butterfly-ſhaped, having a ſtandard, two wings, and the keel, which are often ſucceeded by ripe ſeeds in autumn.

The propagation of all the ſpecies is by ſeeds, cuttings, and layers.

By ſeeds, ſow them in pots in ſpring, which plunge in a moderate hot-bed juſt to bring up the plants, and they muſt afterwards be planted in ſeparate pots.

By cuttings, plant them in May or June, in

in a ſhady border, and they will be well-rooted by autumn.

Layers of the young branches may be performed at any time.

The following are herbaceous ſpecies of this genus.

[1]ANTHYLLIS *Montana.*

*Mountain Herbaceous Anthyllis, or Purple Milk Vetch.*] Anthyllis with trailing ſtalks, winged hairy leaves, having an equal number of lobes, and purple flowers in globular heads at the ends of the branches.

[2]ANTHYLLIS *Vulnaria.*

*Vulnaria, or Scarlet Lady's Finger.*] Anthyllis with ſlender ſtalks, winged leaves, of two or three pair of lobes, terminated by an odd one, and double heads of ſcarlet flowers at the ends of the ſtalks.

They are hardy perennials, and proper furniture for the pleaſure ground, and may be raiſed from ſeed in autumn or ſpring, and by parting their roots.

ANTIRRHINUM, Snap-Dragon, or Calve's-Snout; alſo *Linnaria*, or Toad-Flax, or Frog's-Mouth.

The plants are herbaceous, and of the flowery kind, producing erect ſtalks from one to three feet high, terminated by long erect ſpikes of numerous monopetalous grinning flowers.

The Snap-Dragons are often ſeen growing upon walls and ruins.

Claſs and order, *Didynamia Angioſpermia.*

*Characters.*] CALIX is monophyllous, and deeply five-parted. COROLLA is monopetalous and ringent, the tube oblong, ſwelling, and opening above with a mouth, having two lips, the upper one two-parted and reflexed on each ſide, the under one trifid and obtuſe, and a prominent nectarium at the baſe of the flower. STAMINA, two ſhort and two long filaments. PISTILLUM, a roundiſh germen, ſimple ſtyle, and ſtigma. PERICARPIUM, a roundiſh capſule, having many ſeeds.

The four following are of the Snap-Dragon *Antirrhinums*, diſtinguiſhed from the *Linnaria* by having the nectarium placed within the corolla, which, in the Toad-Flax, is extended at the baſe like a ſpur or horn.

[1]ANTIRRHINUM *Majus.*

*Great Perennial Snap-Dragon.*] Antirrhinum with erect ſtems, two or three feet high; ſpear-ſhaped leaves, having foot-ſtalks, and the ſtem terminated by a long ſpike of many large flowers.

*Varieties.*] Great Perennial Snap-Dragon with red flowers—with white flowers—white and red flowers——with white mouthed red flowers—with yellow flowers—yellow and red flowers——yellow and white flowers——with purple flowers—purple and white ſhaded flowers—and Variegated-leaved Great Snap-Dragon with flowers of different colours.

[2]ANTIRRHINUM *Latifolium.*

*Broad-leaved Greateſt Perennial Snap-Dragon.*] Antirrhinum with erect ſtems, a yard high; broad ſpear-ſhaped ſmooth leaves, on ſhort foot-ſtalks, and the ſtem terminated by a very long ſpike of many elegant large flowers.

*Varieties.*] The flowers of many different colours like the former.

[3]ANTIRRHINUM *Italicum.*

*Italian Perennial White Snap-Dragon.*] Antirrhinum with ſtems two feet high, very long, narrow, ſpear-ſhaped, hairy leaves, the ſtems adorned at top with a ſhort robuſt ſpike of large white flowers.

[4]ANTIRRHINUM *Siculum.*

*Sicilian Annual White Snap-Dragon.*] Antirrhinum with ſtems fifteen inches high, narrow ſpear-ſhaped alternate leaves, white flowers with purple bottoms, ariſing ſingly on long foot-ſtalks from the ſides of the branches.

The following are the *Linarias*, or Toad-Flax *Antirrhinums*, diſtinguiſhable from the Snap-Dragons by the flower being terminated behind by the nectarium, like a ſpur or horn, on which conſideration, Miller ranges it as a diſtinct genera; but Linnæus places them among the *Antirrhinums.*

[5]ANTIRRHINUM *Linaria, Vulgaris.*

*Linaria, or Common Toad-Flax* ] Antirrhinum with many erect ſtems, eighteen inches high, adorned below with numerous, very narrow, ſpear-ſhaped, grey leaves, in cluſters, and each ſtem terminated by a long ſpike of many cloſe-ſitting flowers.

*Varieties.*] Common large Toad-Flax with yellow flowers, and golden chaps.—Large White Toad-Flax——Small Yellow Toad-Flax.

[6]ANTIRRHINUM *Purpureum.*

*Great Purple Sweet-ſcented Linaria.*] Antirrhinum with many erect, branching, very flowery ſtems, a yard high, long, narrow, ſpear-ſhaped leaves, placed ſparſedly, all the ſtems terminated by long looſe ſpikes of many large, purple, ſweet-ſcented flowers.

[7]ANTIRRHINUM *Triſtis.*

*Dark-mouthed Gibraltar Toad-Flax.*] Antirrhinum

rhinum with many declinated ſucculent ſtalks, hardly a foot long, very ſhort, narrow, ſucculent leaves, oppoſite below, but irregular above, the ſtems terminated by cluſters of cloſe-ſitting yellow flowers, ſtriped with purple, dark purple chaps, and awl-ſhaped nectariums.

[8]ANTIRRHINUM *Arvenſis.*

*Field, or Wild Blue Toad-Flax.*] Antirrhinum with many erect, very branchy ſtems, two feet high, narrow leaves in whorls below, by pairs or ſingly above, and all the ſtems and branches terminated by looſe ſpikes of many ſmall blue flowers.

*Variety.*] Field Toad-Flax with yellow flowers.

[9]ANTIRRHINUM *Dalmatica.*

*Dalmatian Shrubby Yellow Toad-Flax.*] Antirrhinum with a ſtrong, erect, woody ſtem, a yard high, broad, ſpear-ſhaped, alternate, cloſe-ſitting leaves, and large deep yellow flowers, in looſe ſpikes, at the ends of the branches.

[10]ANTIRRHINUM *Triphylla.*

*Three-leaved Annual Toad-Flax.*] Antirrhinum with erect branchy ſtems, near two feet high, oval ſmooth leaves by threes, and ſhort ſpikes of flowers terminate the branches.

*Varieties are,*] Three-leaved Toad-Flax with yellow flowers——yellow with purple ſtandard and ſpur——with purple flowers.

All theſe plants are herbaceous, and all perennials, except the *Antirrhinum Siculum* and *Triphylla*, which are annuals, and are moſtly of hardy temperature, and will ſucceed in any of the common compartments of the pleaſure ground; though the *Antirrhinum Triſtis* and *Dalmatica* is ſomewhat impatient of ſevere froſt.

The roots are fibrous, the ſtems riſe ſeveral from each root, and the leaves are univerſally ſimple, and moſtly long and narrow.

The flowers are formed univerſally of one hollow, grinning petal, reſembling the ſnout and mouth of an animal, hence the names Snap-Dragon, Calve's-Snout, Frog's-Mouth, &c.

*Culture of the Snap-Dragon Kinds.*

The Snap-Dragon *Antirrhinums* are extremely pretty garden flowers, but more particularly thoſe of the *Antirrhinum Majus* and *Latifolium*, and are of remarkably eaſy culture, as is obvious by the plants riſing ſpontaneouſly from the ſelf-ſown or ſcattered ſeeds, even out of the crevices of walls, buildings, and ruins, ſo that they are alſo good furniture for artificial ruins, rock-work, &c. And in gardens, thoſe that grow in dry, ſandy, gravelly, rubbiſhy, or any dry hungry ſoil, are alſo of ſeveral years duration; though in rich land they grow ſtrongeſt, and the flowers will be more large and elegant; in which ſoil, however, they are apt to acquire a luxuriancy, or ſpongineſs, and rarely abide longer than one or two years; but this is no inconvenience, ſince they may be raiſed plentifully by ſeed and by ſlips and cuttings.



They flower from June to the end of ſummer, and ripen plenty of ſeed in autumn.

The ſeeds may be ſown in March, April, and May; thoſe ſown in March will flower the ſame year in autumn, and the others the year following. Sow them in a bed of light ſoil, and when the plants are three inches high, tranſplant them; thoſe you intend ſhall blow the ſame year, may be ſown in patches where they are to flower, as directed for hardy annuals.

By ſlips and cuttings is the method to continue the variegated-leaved ſort; any of the others will alſo grow freely by cuttings in a ſhady border in ſummer.

The variegated kind is rather impatient of ſevere froſt, and a few plants ſhould be potted to be houſed in winter.

*Culture of the Toad-Flax Kinds.*

Of the Toad-Flax *Antirrhinums*, the Common *Linaria*, *Antirrhinum Purpureum*, *Arvenſis*, and *Triphylla*, are proper furniture for the common compartments of large pleaſure grounds. The Purple *Linaria* particularly merit a place in every garden. All theſe ſorts flower in June, and continue in ſucceſſion till the end of ſummer, and are ſucceeded by abundance of ſeed in autumn.

The Common Toad-Flax grows wild by the way ſides, that of banks, hedges, and paſtures, as alſo the *Antirrhinum Arvenſis*; but by culture in gardens they grow ſtrong, and produce larger flowers.

All the ſorts may be raiſed plentifully from ſeed, the ſame as the Snap-Dragons; and the perennial ſorts alſo by parting the roots.

The Dalmatian *Linaria* and *Antirrhinum Triſtis* are ſomewhat tender, and ſome plants ſhould be potted to be houſed in winter, and ſome may be planted in warm dry borders; they flower in June and July, but rarely afford ſeeds here.

They are eaſily encreaſed by ſlips and cuttings of their branches in ſummer, or by parting their roots in autumn.

APETALUS *Flos*, i. e. Apetalous Flowers. By botaniſts, a flower is ſaid to be Apetalous that wants the corolla, petals, or flower-leaves.

Of this ſort are many of the amentaceous flowers, moſſes, ferns, and graſſes.

APIUM, Parſley, likewiſe Celery and Smallage.

By the laws of botany this genus comprehends all the ſorts of Parſley and Celery, all of which are uſeful herbaceous biennials, of the kitchen garden.

Claſs and order, *Pentandria Digynia.*

*Characters.*] The flowers grow in compound umbels, each umbel compoſed of many florets, each floret of five petals, five ſtamina, two ſtyles, and ſucceed by two ſeeds.

The ſpecies are,

[1]APIUM *Petroſelinum.*

*Common Parſley*, of which are two varieties, *viz.* Common Parſley with plane leaves.—— Common Parſley with curled leaves.

[2]APIUM *Latifolium.*

*Broad-leaved large-rooted Parſley.*] Apium with a large carrot-ſhaped, ſweet, eatable root, radical leaves divided into three ſerrated large lobes, and have very long foot-ſtalks.

[3]APIUM *Dulce.*

*Sweet Apium, or Common Upright Celery.*] Apium with upright leaves, ſupported on long erect foot-ſtalks, the folioles of the leaves compoſed of five ſerrated lobes.

*Of this are two varieties, viz.* Common Upright Celery with the ſtalks of the leaves fiſtular or hollow —Common Upright Celery with the ſtalks of the leaves ſolid ; — known by the names of Hollow Celery, and Solid Celery.

[4]APIUM *Rapaceum.*

*Turnep-rooted Spreading Celery.*] Apium with a large round turnep-ſhaped root, ſpreading leaves on ſhort foot-ſtalks, and the folioles of the leaves compoſed of five ſerrated lobes.

[5]APIUM *Graveolens.*

*Rank-taſted Apium or Smallage.*] Apium with the cauline leaves, having wedge-ſhaped lobes.

All theſe plants are herbaceous, and of hardy growth, and all of the biennial tribe, i. e. of only two years duration ; the firſt year they produce only leaves, and attain perfection for kitchen uſe ; the ſecond ſpring they ſhoot up ſtalks, flower, and perfect ſeed, and in autumn periſh, root and branch ; ſo that they continue uſeful only one year, and a freſh ſupply muſt be raiſed annually from ſeed.

Some of the ſpecies, if ſown very early, run to ſeed the ſame year, particularly the Celery.

*Firſt, of the Common Parſley.*

The two varieties of the *Apium Petroſelinum*, i. e. the Plane and Curled Parſley, are moſt uſeful culinary and medical herbs, their leaves being in great requeſt for various kitchen uſes, and their roots for medicine.

With reſpect to the properties of theſe two varieties of Apium ; for uſe, their virtues are the ſame both for food and medicine ; the plane-leaved ſort is moſt commonly cultivated, but many prefer the curled kind, for theſe reaſons, becauſe its leaves are eaſily diſtinguiſhed from thoſe of the *Æthuſa*, or Fool's-Parſley, a ſort of hemlock, and a poiſonous garden weed, which, while young, has great reſemblance to the Common plane-leaved Parſley, ſee ÆTHUSA. Likewiſe, the Curled Parſley having larger and thicker leaves, and being curiouſly fimbricated and curled, appearing full and double, make a pretty appearance in its growth, and is greatly eſteemed by cooks as a fine garniſh to diſhes. It is to be however remarked that this ſort, as being only a variety, it will degenerate to the common plane ſort, unleſs particular care is taken to ſave the ſeeds always from the perfect curled plants.

Both the varieties of Common Parſley are propagated by ſeed ſown where the plants are to remain, annually in ſpring, for the plants are biennials, riſing from ſeed in March, April, or May; continue uſeful until that time twelvemonth, then ſhoot up, ſtalk, perfect ſeed, and periſh.

The ſeaſon for ſowing both varieties, is any time from the beginning of February until the beginning of May, though they will grow almoſt any time of the year ; however, to have the plants come in for uſe by the time the old Parſley begins to run, it is proper to ſow in February or March, and the plants will be fit to cut in May, or beginning of June.

It is moſt eligible to ſow this ſeed in drills, as it will be more convenient to clean and gather the herbs for uſe. Where only a ſufficiency is required for the ſupply of a family, it may be ſown in a ſingle drill along the edges of the borders, or quarters of the kitchen garden, and the plants will ſerve a double purpoſe, for they will form an edging, and give an air of regularity and neatneſs to the place, at the ſame time yield their produce plentifully ; but for the ſupply of markets, the London gardeners ſow it alſo in large plats, either in broad caſt, and rake it in, or in ſhallow drills, eight or nine inches diſtance,

tance, and trim the earth evenly over it, near half an inch deep, and lightly rake the ſurface ſmooth.

This ſeed is ſo extremely ſlow in its vegetative motion, that its germination, or at leaſt, the appearance of the plants, is not to be expected in leſs than five or ſix weeks.

All the culture the plants require is to be kept clean from weeds, and when they at any time grow faſter than is wanted for uſe, as is often the caſe in private gardens, they, when grown rank and ſpreading, ſhould be cut down cloſe; this ſhould be particularly practiſed in autumn, i. e. about Michaelmas, time enough for the plants to recover before winter, and numerous young leaves will riſe from the roots, and form a thick compact edging.

To ſave Parſley ſeed, permit ſome rows of the one year old plants to ſtand, and they will ſhoot up their ſtalks in May and June, and ripen ſeed abundantly in July and Auguſt.

*Of the Second Species, Broad-leaved large-rooted Parſley.*

The *Apium Latifolium*, or Broad-leaved Parſley, is eſteemed for its large roots, which are boiled and eaten as ſauce to fleſh meat.

Theſe roots are white and carrot-ſhaped, being long, taper, and of downright growth, and often obtain the ſize of a middling carrot; they boil exceeding tender and palatable, are very wholeſome, and may be uſed in ſoup or broth, or to eat like carrots and parſneps; the uſe of them is greatly recommended to perſons that are ſubject to the gravel, and are uſed in decays of many kinds.

They are raiſed in great perfection by the London gardeners, who ſupply the markets with them in bunches.

Their ſeaſon for uſe is from July until Chriſtmas, or even till March.

The propagation of this ſpecies of Apium is by ſeed ſown where the plants are to remain, annually in February, March, or April. Chuſe a ſpot of light rich earth, in an open expoſure; ſow the ſeed broad-caſt, and rake it in: the plants will appear in April, and in May they will require to be thinned, and cleared from weeds, which may be performed either by hand or hoe, but the latter is moſt eligible, as it will ſtir and looſen the ſurface, which will be beneficial to the plants, cutting them out to about ſix inches diſtance.

In the latter end of July the roots will have attained a due ſize for uſe, when ſome may be drawn occaſionally, but they do not acquire their full growth until Michaelmas.

This ſort is ſometimes called Hamburgh Parſley, becauſe the plants are greatly cultivated in the gardens near that city.

*Of the Third Species, Common Celery.*

The *Apium Dulce*, or Common Celery, in both its varieties, is in univerſal eſteem as a culinary and ſallad herb, and the ſtalks of its leaves are the only parts uſed, which are excellent in ſoups, and for ſtewing, and as an autumnal and winter ſallad herb, it ſurpaſſes many others. It may be obtained for uſe nine or ten months in the year, that is, from July until the middle or end of May; but the ſeaſon of its greateſt perfection, is from about the middle or latter end of Auguſt till Chriſtmas, or even till March, if the winter do not prove ſevere.

Both the varieties are of upright growth, and obtain two feet and half in height, which, by the culture of planting them out in trenches, together with ſeveral repetitions of earthing up their ſtalks as they advance in ſtature, they become very white, tender, and palatable, which otherwiſe would be tough and rank-taſted.

The Hollow Celery is the original variety, having been long known before the ſolid kind, the ſtalks of the latter having no hollow or vacancy in the middle; the former have, and is the principal difference, for they poſſeſs equal properties for general uſe, though the ſolid kind is often preferred for ſoups and ſtewing; but we however do not recommend it for a general winter crop, becauſe it will not endure froſt ſo well as the common Hollow Celery, nor for market ſervice, it being very brittle, will eaſily break in waſhing and bunching up, as practiſed by the London gardeners, who bind ſix, eight, ten, or twelve heads, placed ſingly, but cloſe together, in a flat ſpreaded bunch.

Their propagation and culture is as follow.

They are propagated by ſeed ſown in the ſpring, and when the plants have attained ſix or eight inches in height, they are to be tranſplanted into trenches, in order to be earthed up on each ſide as they advance in growth, to blanch or whiten their ſtalks, to render them criſp and tender. See *Tranſplanting* and *Earthing them up*.

A freſh ſupply of plants muſt be raiſed annually, for the plants continue uſeful but one year.

The proper periods of time for ſowing it,

are, that, if a regular ſucceſſion of plants is required, eight or nine months in the year, it is neceſſary to perform three different ſowings from the beginning of March until the middle of May.

As for example, if it is intended to have Celery for uſe as early as poſſible in ſummer, i. e. in July, ſow ſome ſeed the firſt week in March, on a warm border; or, to bring the plants more forward, in a ſlender hotbed; or if you are anxious to have very early Celery, ſome ſeed may be ſown in the middle of February; but as theſe very early ſown plants are apt to pipe, or run for ſeed the ſame year, before they attain half their perfection, a few ſhould only be raiſed.

But for the general or principal crops, to come in for autumn and winter ſervice, that is, in Auguſt or September, and continue in perfection till Chriſtmas or ſpring, the ſeed ſhould be ſown towards the latter end of March, or in the firſt or ſecond week in April, in a bed of natural earth, in an open expoſure, and if a little more is ſown in the latter end of the laſt named month, or in the firſt or ſecond week in May, it will furniſh a latter crop to come in for uſe the beginning of November, and continue good until the latter end of March; and by planting ſome in ſhallow trenches about Michaelmas, and in October and November, they will be fit for uſe in March and April, and continue without running till the middle or latter end of May.

We obſerved above, that the early crop may either be ſown upon a warm border of natural earth, or upon a hot-bed of ſlender ſtructure; by the latter practice, the plants may be ſo forwarded as to be fit to tranſplant into trenches ſooner by three weeks or a month, than thoſe raiſed in the natural ground; a ſmall bed, about eighteen or twenty inches depth of dung, will be ſufficient, which may be ſheltered either with a ſmall frame, or occaſionally with mats ſupported on arches; lay thereon five or ſix inches of rich light earth, ſow the ſeed on the ſurface, and cover it near a quarter of an inch deep; when the plants appear, admit the full air freely in mild days, but ſhelter them with a glaſs or mats on nights, until they acquire ſome ſtrength, and give frequent light watering; and when the plants, of either ſowing, are two inches high, ſome of the ſtouteſt ſhould be pricked out into a bed of rich earth, in a ſheltered ſituation, three inches apart; or to bring them ſtill more forward, ſome might be pricked upon a ſlender hotbed, occaſionally ſheltered with mats, giving water and occaſional ſhade till they have ſtruck root; and if rain do not fall, refreſh them frequently with water, as you ſhall ſee neceſſary.

Thoſe that were firſt pricked out, will, in May or the beginning of June, be five or ſix inches high, when ſome of the ſtrongeſt ſhould be tranſplanted into trenches, in order to their being blanched. See *Tranſplanting into Trenches*, next page, &c.

With regard to ſowing the main and latter crops, obſerve the following directions.

At the times above noticed, make choice of a ſpot of rich light earth, in an open ſituation, and let it be then neatly dug, and divided into one or more beds; but one ſmall bed is ſufficient for private uſe, which ſhould be three feet and half wide, making the ſurface level and ſmooth; this done, the ſeed may either be ſown on the ſurface, and raked in lightly, or otherwiſe firſt rake the ſurface fine, then ſow the ſeed, and ſift earth over it near a quarter of an inch thick; or if the ſurface being firſt raked ſmooth as above, then, with the back of a rake, ſhove the earth from off the ſurface a quarter of an inch deep into the alley; ſow the ſeed, and then with the rake turned the right way draw the earth on the bed again, with a kind of jerk, that it may ſpread and cover the ſeed equally in every part.

When the plants of either ſowing are come up, they ſhould, in dry weather, be frequently watered; do not omit this, particularly whilſt the plants are young.

When the plants of each ſowing are about three or four inches high, it is adviſeable to thin the ſeed-bed by pricking out a quantity of the ſtrongeſt into an open rich ſpot, properly dug and divided into beds three feet and half wide, taking opportunity, if poſſible, of moiſt weather, and prick the plants therein, in rows ſix inches aſunder, and three or four inches diſtant in each row, giving water, which, if dry weather ſucceeds, ſhould be occaſionally repeated, till they ſtrike freſh root, and in which bed they are to remain five or ſix weeks to acquire due ſtrength, previous to their being tranſplanted into trenches, in order for blanching.

The ſame ſeed-bed will afford three, four, or more different drawings to prick out as above, which, by obſerving to thin out the largeſt

largeſt regularly each time, before they draw each other weak by cloſe ſtanding, and prick them in beds till the ground intended for the trenches is at liberty, they will be advancing in their growth, and will be conſiderably better prepared, than ſuch that have remained all the time in the ſeed-bed.

*Tranſplanting them into the Trenches.*

The ſeaſon for tranſplanting theſe plants into the trenches for blanching, is occaſionally from the middle of May until the latter end of October, or even middle of November, according to the forwardneſs of the plants, time they are required for uſe, and the time it is intended they ſhall continue.

Obſerve, that when the plants are from about ſix to ten or twelve inches high, they are of a proper ſize for tranſplanting into the trenches.

It is neceſſary always to make, at leaſt, three different plantations, allowing the diſtance of three weeks between each time of planting; but when the plants are required for uſe as early in ſummer as poſſible, and to be continued as late in ſpring as the middle or latter end of May, it is eligible to plant five or ſix different crops, allowing the diſtance of time abovementioned between the planting each ſeparate crop; and obſerve that the crops intended principally for ſpring uſe, i. e. March, April, and May, ſhould not be planted in the trenches until October and beginning of November.

The manner of making the trenches, and tranſplanting the plants therein, is as follow.

Make choice of a rich ſpot of ground, in an open quarter, and if there be any weeds, hoe the ground, and rake them off; then, with a line and ſpade, mark and chop out the trenches croſs-ways the piece of ground, each trench twelve inches or one ſpade wide, and allow a ſpace of three feet between trench and trench, that there may be ſufficient ſcope to have a due portion of earth to land up the plants a proper height; the trenches being thus marked, then proceed to dig them out to form the cavity for the reception of the plants; obſerve to dig out each trench a moderate ſpade deep, without taking out any ſhovelling, laying the ſpits of earth alternately to the right and left in the ſpaces between, levelling it neatly, and beating up the edges firm and ſtrait, and then let the bottom be properly dug and levelled; or if the ground is poor, you may firſt ſpread therein two or three inches depth of rotten dung, and dig it in four or five inches deep.

The trenches being ready, get the plants and trim them by cutting off the ends of their roots, and the tops of the ſtraggling leaves; then plant one row exactly along the middle of each trench, placing the plants four or five inches diſtance; and directly give a hearty watering out of a pot with the roſe on, which, if ſhowers do not fall, ſhould be repeated every other evening at leaſt, till the plants have taken freſh root.

Do not plant out many of the very early plants, i. e. thoſe ſown in February, or early in March, becauſe they are apt to pipe almoſt as ſoon as they are blanched.

When it happens that the plants intended for the late crops have ſtood ſo long in the ſeed or pricking-out bed, as to become rank, and grown ſo cloſe as to draw each other up weak; in order to retard their running up tall, and to obtain them of ſhort and robuſt growth againſt October and November, to plant in ſhallow trenches, it is adviſeable, in Auguſt or September, either to cut them down low to ſhoot out again, or tranſplant them in rows nine inches diſtance.

*Earthing, or Landing up the Plants.*

As we before noticed, theſe plants, in order to whiten or blanch the ſtalks, and render them criſp, tender, and of a grateful flavour, ſhould, according as they riſe in height, be earthed or landed up on each ſide, uſing for that purpoſe the earth that was dug out of the trenches, and when that is expended, that in the ſpaces between them muſt be dug, broken, and uſed repeatedly as the plants advance in growth.

The proper period to begin this work of earthing, is when the plants are about ten or twelve inches high, and which ſhould be repeated every fortnight or three weeks, as you ſhall ſee neceſſary, during their principal growth.

In performing this work, regard muſt be had to break the earth moderately fine, and trim it up to the plants with attention, not to break the ſtalks of the leaves, nor force the mould into their hearts. At the firſt time of earthing, you may land them three, four, or five inches, according to the ſize and height of the plants, obſerving the ſame rule at each time of earthing them, till they are by degrees landed at leaſt twelve, but if fifteen or twenty inches, the better; which, if the ſoil is rich, and ſomewhat moiſt, thoſe of the main crop that are planted out in the end of June, or in July, ſometimes make ſuch progreſs, that if properly followed up with earth, they

they will, by October, be blanched eighteen inches, or near two feet in length.

The above work of earthing is to be continued to the latter crops, occaſionally, until Chriſtmas, or as long as the plants continue to grow in height during the winter; at which ſeaſon, i. e. November and December, it is proper to land them up pretty near their tops, in caſe of hard froſt ſetting in, which often deſtroys ſuch part of the plants as are out of the ground, which, if of conſiderable length, would occaſion the decay of moſt of the other parts within the earth.

In performing the different landings up, let it always, if poſſible, be done when the plants are dry, otherwiſe they are apt to become ſpotted and cankery.

*Of taking up the Plants for Uſe.*

Some of the firſt landed up plants, if they were planted in trenches in May or beginning of June, will be fit to take up in July, for when theſe early plants are blanched five or ſix inches in length, you may begin to take them up; for if they were ſown pretty early, they rarely continue long before they begin to pipe, and ſoon become uſeleſs.

But the plants of the main crop will not be blanched any conſiderable length till the latter end of Auguſt, or beginning of September, but will not acquire their full perfection until October, as we before obſerved. However, where there is a demand for the plants, you may begin to take ſome up when they are whitened ſix or ſeven inches, as, if properly followed with earthing, they will be encreaſing every day in length in the blanched part.

In winter, at the approach of very ſevere froſt, it would be of particular advantage to cover ſome of the rows of the main crop with dry long litter, to ſave the plants, and prevent the ground being frozen hard, that the plants may readily be dug up when wanted.

Likewiſe, at the approach of hard froſt, a quantity of the plants may be taken up for the uſe of a family, and laid in ſome dry earth in a ſhed, or other ſheltered place.

*Another Method of Planting Celery in Trenches for Blanching.*

There is a method of planting out the Upright Celery in trenches, but little known or practiſed in theſe parts; the manner of it is as follows:

Having fixed upon an open piece of ground, then with a line and ſpade cut or mark out a bed, or rather trench, ſix feet wide, croſsways the ground; this done, begin at one end, and proceed to dig out a cavity the above width and length, one ſpade deep, laying the ſpits of earth to the right and left in a ridge along each ſide of the ſaid cavity or trench, beating it up in front that it may not ſlip down, and when the trench is thus dug, looſen and level the bottom, and if dung is needful, let ſome be added, and dig it into the bottom four or five inches deep.

When more than one of ſuch trenches are to be made, allow a clear ſpace of ſix feet between trench and trench, to contain the earth dug out, and to have a ſufficiency to land up the plants.

Theſe trenches being prepared as above, then, having the plants and trimming them as before directed, proceed to plant them; but obſerving they are here to be planted in rows croſs-ways the trench, the rows to be a foot aſunder, and the plants to be ſet ſix inches diſtant in each row, and giving water as adviſed in the other method.

When the plants are of due height for earthing up, the earth that was thrown out of the trenches is to be firſt uſed, then that of the ſpaces; break it fine, and with the ſpade trim it in carefully between the rows of plants, in equal portions from each ſide of the trench, landing them up a due height, which is to be occaſionally repeated, obſerving the ſame rules as adviſed in earthing the plants.

In landing up the plants that are planted in the above method, it will be of advantage, when they have attained a large growth, to be furniſhed with a couple of thin boards, ſix feet long; theſe are to be uſed at the time of earthing, to ſlip into the ſpaces between the rows of plants, to keep the ſtalks and leaves up cloſe juſt till the earth is put in, placing them cloſe to the plants; then trim in the earth between the boards, and when one ſpace is thus earthed, draw out the boards and place them in the next, and in that manner proceed in earthing the ſeveral rows in every ſuch trench.

*Culture of the Fourth Species, Turnep-rooted Celery.*

The *Apium Rapaceum*, or Turnep-rooted Celery, is eſteemed principally for its root, which acquires a globular turnep-like form, and by culture becomes very white and tender, and is uſed for the ſame purpoſes as the Common Celery.

The leaves of this ſort ſpread out ſomewhat horizontally, and rarely exceed ten or twelve inches in length, which, when blanched,

blanched, may be uſed like the Upright Celery.

It is propagated by ſeeds, in an open rich ſpot, in March or April, ſowing it as directed for the common ſort, and when the plants are an inch or two high, thin them to three inches; and when they are four or five inches in height, tranſplant them into ſhallow trenches; previous to which, dig the ground all over, one ſpade deep, then with an hoe draw drills three inches deep, and eighteen aſunder, and ſet the plants therein, ſix inches diſtance, and give water.

When the plants are advanced nine or ten inches in growth, obſerve the progreſs of the roots, and when they have acquired a tolerable ſize, draw earth up to each ſide of the row of plants, three or four inches high, which one earthing is ſufficient to improve, the roots, which will be fit to take up for uſe in three or four weeks after.

*Of ſaving Seed of this Species.*

When it is intended to ſave Celery ſeed, leave a few of the fineſt plants in the places where they were planted out for blanching; they will ſhoot up their flower-ſtems in May and June, flower in July, and ripen their ſeeds in Auguſt, when the ſtalks ſhould be cut and ſet in the ſun a week to harden, then beat out the ſeed, and put it up in bags.

*Fifth Species, the Smallage.*

The *Apium Graveolens*, or Smallage, is a common weed, bearing great reſemblance to Celery, inaſmuch that the latter is by ſome ſuppoſed to be a variety of the former, raiſed to its preſent ſtate of perfection by long culture; but I greatly doubt this, ſince both ſorts retain their difference from ſeed.

This ſort is uſed in medicine, but rarely for culinary purpoſes, except ſometimes by poor country people to put in broth, or pottage, in default of other herbs.

It grows wild in moiſt places, and is ſeldom cultivated in gardens; but if wanted, it may be raiſed plentifully from ſeed in the ſpring.

APOCYNUM, Dog's-Bane.

This genus comprehends hardy herbaceous perennials, and tender ſhrubby exotics, all of the flowery tribe, obtaining from two to five or ſix feet ſtature, adorned with ſimple leaves, and monopetalous bell-ſhaped flowers in cluſters.

Claſs and order, *Pentandria Digynia.*

*Characters.*] CALIX is monophyllous, five-parted at the edge, and permanent. COROLLA is monopetalous, bell-ſhaped, and five-parted at the brim, and five oval nectariums at bottom. STAMINA, five filaments, and biſid antheræ. PISTILLUM, two germina, two ſmall ſtyles, and globular ſtigma. PERICARPIUM, two capſules, containing many ſeeds.

The ſpecies are,

[1]APOCYNUM *Androſæmi-folium.*

*Tutſan-leaved Canada Apocynum.*] Apocynum with upright herbaceous ſtalks, a yard high; large oval, ſmooth, ſtiff leaves, growing oppoſite by pairs, and the ſtalks crowned by cymoſe umbels of white flowers, having purpliſh nectariums.

[2]APOCYNUM *Cannabinum.*

*Dwarf Canada Dog's-Bane.*] Apocynum with upright herbaceous, reddiſh ſtalks, two feet high, oblong ſmooth leaves, ſet oppoſite by pairs, and the upper parts of the ſtalks terminated by greeniſh-white flowers in panicles.

[3]APOCYNUM *Venetum.*

*Venetian Willow-leaved Apocynum.*] Apocynum with erect herbaceous ſtalks, two feet high, oval ſpear-ſhaped ſmooth leaves, placed oppoſite by pairs, and the top of the ſtalks adorned with large flowers, collected into bunches.

*Varieties of this.*] Venetian Apocynum with purple flowers—with white flowers.

[4]APOCYNUM *Fruteſcens.*

*Shrubby Upright Ceylon Apocynum.*] Apocynum with a ſhrubby, erect, branchy ſtem, obtaining five feet in height, the branches adorned with oval ſpear-ſhaped, ſmooth, ſhining leaves, ſet oppoſite by pairs; and flowers collected into ſmall bunches, having an acute corolla, and hairy jaws.

*Varieties.*] Shrubby Apocynum with purple flowers——with yellow flowers.

[5]APOCYNUM *Reticulatum.*

*Climbing Veined-leaved Indian Dog's-Bane.*] Apocynum with a twining perennial ſtalk, climbing twenty or thirty feet high, oval, very much veined leaves, by pairs oppoſite; and ſmall bunches of flowers from the ſides of the branches.

*Varieties.*] With purple flowers—greeniſh flowers—with white flowers.

For other ſpecies of Dog's-Bane, ſee ASCLEPIAS, PERIPLOCA, and CYNANCHUM.

The three firſt ſpecies are hardy herbaceous perennials; the roots are fibrous, and very creeping; the ſtalks riſe annually from the root in ſpring, and periſh in autumn; the leaves are ſimple, and pretty large, which,

as

as well as the ſtalks, abound with a milky juice: the flowers are formed each of a ſingle hollow, bell-ſhaped petal; thoſe of the *Apocynum Venetum* are conſiderably the largeſt and moſt beautiful: they all flower in July and Auguſt, but rarely perfect ſeeds in Britain.

Theſe three ſorts and their varieties are proper furniture for the common compartments of the pleaſure ground.

The propagation of theſe three ſpecies is eaſily effected by their creeping roots, in autumn or ſpring, either by dividing the main root, or by joints thereof.

The *Apocynum Fruteſcens*, and Climbing Dog's-Bane, are tender exotics of the ſtove; the firſt has moſt claim to attention.

They may be propagated by ſeeds procured from abroad, and by cuttings and layers, either of which muſt be aſſiſted by a hot-bed, and the plants are to be potted and always retained in the ſtove.

AQUATICÆ *Planta*, Aquatic Plants, i. e. ſuch that grow in or near waters, either rivers, ponds, watery ditches, or other very marſhy places.

AQUILEGIA, Columbine.

The plants are hardy, herbaceous, flowery perennials, that obtain from one to three feet ſtature, adorned at top with many pentapetalous nectarious flowers.

Claſs and order, *Polyandria Pentagynia*.

*Characters.*] CALIX none. COROLLA, five oval, ſpear-ſhaped, ſpreading petals, and alternately with theſe are ranged five hollow and horned nectariums, their lower part lengthened to a long incurved tube. STAMINA, numerous filaments, and erect antheræ. PISTILLUM, five oval germina, five ſubulate ſtyles, and ſimple ſtigmas. PERICARPIUM, five erect cylindrical capſules, containing numerous oval ſhining ſeeds.

There are but three ſpecies, which are,

[1]AQUILEGIA *Hortenſis*.

*Garden, or Common Columbine.*] Aquilegia with upright ſtems, a yard high, dividing into many erect branches, leaves compoſed of many lobes, growing by threes, and all the branches terminated by the flowers, which have incurved nectaria.

Varieties of this are numerous, and ſingularly curious, which are,

Common Columbine with flowers compoſed of five petals, ranged alternately with five nectaria, as expreſſed in the characters.

Common Columbine with flowers compoſed of double petals, and nectaria ranged alternately.

Common Columbine with flowers, having no viſible nectaria, and compoſed principally of oval petals, of which there are ſingle and very double flowers; commonly called Roſe Columbines.

Common Columbine, having no viſible nectaria, and compoſed principally of ſharp-pointed petals, expanding like a ſtar, of which there are ſingle and perfectly double flowers, commonly called Starry Columbine.

Common Columbine with flowers, having no petals, being compoſed entirely of nectaria, of which there are ſingle, double, and trebly double flowers, having numerous nectaria, placed one within another, in a curious manner.

Common Columbine with inverted flowers.

Of each of the above varieties, there are blue flowers—white flowers—red flowers—purple flowers—fleſh-coloured flowers—aſh-coloured flowers—cheſnut-coloured flowers. ——Of variegated kinds there are, blue and purple flowers—blue and white flowers—with red and white flowers—blue and white flowers—with finely ſtriped flowers—with flowers having one part plain or ſelf-coloured, the other curiouſly ſtriped and ſpotted with different colours.

[2]AQUILEGIA *Vulgaris*.

*Wild Mountain Blue Columbine.*] Aquilegia with upright ſlender ſtems, two feet high, dividing into many ſlender erect branches, many-parted leaves, and large ſingle blue flowers terminate the branches, and with erect nectaria, and ſhort ſpear-ſhaped petals.

This grows wild in many places in woods and hilly grounds.

[3]AQUILEGIA *Canadenſis*.

*Canada Dwarf Early Columbine.*] Aquilegia with upright ſtalks, a foot high, dividing into ſlender erect branches, each terminated by a ſingle flower of a red colour, with a yellow middle, having erect nectaria, and ſtamina longer than the corolla.

All theſe ſpecies and reſpective varieties are hardy herbaceous perennials; the roots are fibrous, and the leaves and flower-ſtems riſe annually from the root in ſpring; the leaves are branching, and compoſed of many lobes, growing generally by threes; the ſtems divide into many branches, each terminated by the flowers, which are large, numerous, and very ſhowey, appearing in April, May, and June, and ripen ſeeds plentifully in Auguſt and September.

The *Aquilegia Hortenſis*, or Garden Columbine,

bine, in all its varieties, are choice furniture for pleaſure grounds of any extent, their flowers being large and numerous, and aſſuming many curious ſtructures, forms, ſizes, colours, and variegations, as to be extremely conſpicuous and ornamental in a garden, and thoſe of all the double variegated and ſtriped kinds particularly have ſingular elegance; and in ſhort, all the varieties are capable of forming a moſt agreeable diverſity, and they proſper freely in any common ſoil and expoſure, but make the fineſt appearance in an open ſituation.

It is remarkable that all the different varieties of this ſpecies, in regard to ſtructure, form, ſize, colour, and variegations of the flowers, are often obtained from the ſeed of the ſame plant.

All the varieties of this ſpecies flower in the end of May, and in June.

The *Aquilegia Vulgaris* have no ſtriking beauty, but the flowers being large, will form a variety in the common borders in May and June.

The Canada Columbine merits culture principally for its early bloom, which generally appear in April.

*Propagation, Culture, &c.*

Firſt of the *Aquilegia Hortenſis*. All the varieties of this ſort may be raiſed plentifully from ſeed, and by dividing their roots.

The ſeed may be ſown either in autumn or ſpring, in a bed or border of common light earth; dig the ground neatly one ſpade deep, ſow the ſeed moderately thick on the ſurface, and rake it in, and the plants will appear in April or May, giving occaſional water and weeding until June, July, or Auguſt, according to their ſize; then prick them out upon another bed in rows nine inches diſtance, and give occaſional watering during the hot weather. Next ſummer the plants will flower, but not ſtrong; when the beſt kinds ſhould be marked, in order to be removed in autumn into the moſt conſpicuous compartments, where they will flower ſtrong, and in their utmoſt perfection the year following, and continue ſeveral years.

In order to keep up a ſucceſſion of fine flowers, a ſupply of plants ſhould be raiſed from ſeed every two or three years, becauſe the old plants diſcover a degeneracy, that often, from the fulleſt doubles, and elegant variegations, become ſingle, and of plain colours.

By parting the roots, any variety may be encreaſed; but this ſhould be performed always upon the young plants of two or three years old, before they degenerate, which may be done in autumn or ſpring.

In ſaving ſeeds of this ſpecies, gather it always from the plants that exhibit the fineſt flowers.

The other two ſpecies, Mountain and Canada Columbines, are to be propagated in the ſame manner as the garden kinds.

All the culture neceſſary for the ſeveral kinds, is to keep them clean from weeds in common with other plants, and to cut down their decayed ſtems in autumn.

ARALIA, Berry-bearing Angelica, and Angelica-Tree.

This genus comprehends two herbaceous perennials, and one woody plant, of the tree kind.

Claſs and order, *Pentandria Pentagynia*.

*Characters.*] CALIX, globular umbel of flowers, having a ſmall involucrum, and very ſmall cup to the florets, reſting on the germen. COROLLA, the florets of the umbel have five oval petals. STAMINA, five filaments, and roundiſh antheræ. PISTILLUM, a roundiſh germen below the calix, five ſhort ſtyles, and ſimple ſtigma. PERICARPIUM, a roundiſh ſtriated berry, containing five ſeeds.

The ſpecies are,

[1]ARALIA *Racemoſa*.

*Leafy-ſtalked Herbaceous Canada Aralia.*] Aralia with an upright, ſmooth, branching, leafy ſtem, obtaining three or four feet ſtature, adorned with large leaves, compoſed of many oval ſerrated lobes, and flower-ſtalks riſing from the angles of the leaves, terminated by round umbels of whitiſh flowers.

[2]ARALIA *Nudicaulis*.

*Naked-ſtalked Herbaceous Virginia Aralia.*] Aralia with an upright naked, or leafleſs ſtalk, a yard high, large branching leaves, of two or three diviſions, each diviſion compoſed of five ſerrated lobes, and riſe directly from the root, and between them the ſtalks, crowned by round umbels of whitiſh flowers.

[3]ARALIA *Spinoſa*.

*Thorny Tree-like Virginia Aralia, or Angelica-Tree.*] Aralia with a tree-like branching ſtem, growing ten or twelve feet high, defended by ſtrong ſpines, large, long, decompounded, ſpinous leaves, compoſed of many wings, each wing of many oblong lobes, and large, looſe, greeniſh-yellow umbels of flowers terminate all the branches.

All theſe plants are natives of America, but grow freely here in the full ground.

The appellation of Angelica to theſe plants, is from their ſimilarity of growth, and the young leaves forming a cluſter at the ends of the ſtem and branches, like thoſe on the ſame parts of the Common Angelica.

The *Aralia Racemoſa* and *Nudicaulis* are herbaceous perennials; the roots are fibrous, and creep conſiderably, and the ſtalks riſe annually from the root, produce their large umbels of flowers in June and July, and are ſucceeded by plenty of ſeed in cluſters of ſmall black berries, ripe in September and October.

Theſe two ſpecies aſſuming a large branching majeſtic growth, are proper furniture for the compartments of large ſhrubberies, and to embelliſh thoſe of wilderneſs works, and the borders of wood-walks, &c.

Their propagation is by ſeed, and by dividing their roots.

The ſeed, if ſown in autumn, in a bed of light earth, will riſe freely in the ſpring, and in autumn tranſplant the plants where they are to remain.

By roots they encreaſe exceedingly, which may be parted in autumn when the leaves decay.

The *Aralia Spinoſa*, or Angelica-Tree, is deciduous in leaf. It is a plant of ſingular appearance in ſummer, when cloathed with its large, long, doubly branching, many-lobed leaves, and claims a place in the moſt conſpicuous parts of the ſhrubbery.

It flowers in Auguſt, but rarely perfects ſeed in England.

The propagation of this ſpecies is by ſeed, and by planting pieces of its horizontal roots.

The ſeed is procured from America. Sow it as ſoon as it arrives, in ſpring, in pots of light earth, and cover it half an inch deep, and if they are plunged in a moderate hot-bed, it will facilitate their germination; but in default of this, plunge the pots in a dry warm border, give occaſional light waterings and ſhade in hot ſunny days, and probably the plants will appear the ſame year; but if this is not effected by June, move the pots under a ſhady hedge or wall for the remainder of the ſummer, and in October place them in a garden frame, to have occaſional ſhelter from froſt during winter, in which let them remain until March; then plunge them in a warm border, and if the plants did not come up before, they will now appear, giving water occaſionally, and remove the pots to the ſhade in ſummer, and into a frame again in winter, to continue until the latter end of March; then tranſplant them, ſome ſeparately into ſmall pots, others in a bed of light earth, in a ſheltered ſituation in the nurſery: thoſe planted in the pots are deſigned to be moved to ſhelter in winter, becauſe the ſeedling plants are tender the firſt two or three years; ſome ſhelter ſhould alſo be beſtowed the firſt winter upon thoſe in the full ground, when the froſt is very ſevere.

When theſe plants are three or four years old, or two or three feet high, they may be tranſplanted into the ſhrubbery.

To propagate them by roots, cut off pieces of the horizontal ones in ſpring, and plant them in pots, which plunge in a hot bed, and they will ſend out fibres below, and ſhoots above.

Likewiſe, by ſeparating ſome of the roots from the plant in ſpring, permitting them to remain in the ground, they will alſo ſend up ſeveral ſhoots or ſtems.

ARBOR, a Tree. A perennial plant, riſing with a ſimple, woody, and durable ſtem or trunk, to a great height and ſubſtance.

This definition of a tree is principally the ſubſtance of what naturaliſts advance to diſtinguiſh a tree from a ſhrub, which is ſuppoſed to be of leſſer growth, and for the general part to have ſeveral ſtems; and from herbaceous plants, whoſe ſtems are ſoft, often ſucculent, and moſtly riſe in ſpring, and periſh in autumn, though this is not general.

But in regard to the diſtinction between trees and ſhrubs, it is not univerſally obvious. Nature, ſays Linnæus, has put no limits betwixt trees and ſhrubs; for to ſay that trees are taller than ſhrubs, is in effect ſaying nothing, unleſs a certain fixed immutable ſtandard were previouſly eſtabliſhed. Beſides, every thing reſpecting dimenſions is ſo variable in its nature, and depends ſo much upon difference of climate, ſoil, and culture, that no certain ſtandard or boundary can with propriety be fixed between trees and ſhrubs, ſince the ſame plant, in different countries, often aſſume very different growths; thus the *Arbutus*, and Laurel, in warm climates, grow to large trees; in this country are generally conſidered as ſhrubs.

The only definition therefore that can be made, is, that, for diſtinction ſake, ſhrubs may be conſidered as ſuch, which either riſe with

with ſeveral ſtems from the root, or that the main ſtem divide near the root into ſeveral ſmaller ones. See FRUTEX, *a Shrub.*

ARBOURS.

Theſe are departments in gardens formed with various ſorts of trees and ſhrubs, in ſuch order as to encloſe a certain ſpace, to form a kind of receſs and ſhady retreat from the walks, in the heat of ſummer.

They were in great repute formerly, and were commonly formed of ever-greens, very often of yews, planted very cloſe, the ſides trained erect, ſix, eight, or ten feet high, and the top formed like a vault, or trained arch-ways, over an arched frame or lattice-work, of wood or iron, and arched openings or arcades were curiouſly formed on the ſides, and the whole was ſhorn or clipped annually, to keep them in due order, which often appeared very ornamental, according to the ancient ſtyle of gardening.

Theſe kind of Arbours were alſo often formed of deciduous trees, particularly thoſe of the elm, and ſometimes with hornbeam, beech, and limes, which were conſtantly ſheared every ſummer.

The figure of theſe Arbours, both of the ever-green and deciduous kinds, were either ſquare, hexagonal, octagonal, or round; and their dimenſions were from ten to fifteen feet in width and height; the tops were formed either pavillion, turret, or dome faſhion, and ſometimes terminated by a globe, pyramid, or other figure, formed of the extreme branches.

Covered Arbours or Bowers may be formed very quickly, even in one ſeaſon, with ſeveral ſorts of ſhrubby climbers, ſome of which will advance fifteen or twenty feet in one ſummer. See CLIMBING PLANTS.

When it is deſigned to form an Arbour, it ſhould, if poſſible, be erected upon a ſomewhat riſing ground, for the greater advantage of free air, and to enjoy the proſpect of the garden and adjacent country.

An Arbour is ſometimes formed in the head of a ſingle tree, particularly that of the elm, when the trunk has divided at the height of ten or twelve feet, into ſeveral leſſer ſpreading ſtems, to admit of erecting a ſmall platform between, cutting down the large boughs, and training the pliable branches arch-ways over lattice-work, till thoſe of each ſide meet; ſo continue to ſhear the ſides annually, and the top may either be cut, or permitted to grow up.

Rural Arbours are ſometimes formed thus: plant ſome of the talleſt growing flowering ſhrubs round the inſide, to form the dimenſions of the Arbour; then, on the outſide of theſe, plant others of ſomewhat leſſer growth; ſo continue three or four ranges, diminiſhing gradually in ſtature from the Arbour outward, permitting the whole to take their natural growth; ſo that at a diſtance it will aſſume the appearance of one of the common ſhrubbery clumps.

The bottom of Arbours ſhould be gravelled, and garden chairs placed there in ſummer, which ſhould always be houſed in winter.

ARBUTUS, the Strawberry-Tree.

This genus furniſhes moſt beautiful ever-green ſhrubs for the ſhrubbery, remarkable for producing fine cluſters of ſcarlet fruit, like ſtrawberries, hence they derive the appellation Strawberry-Tree.

Claſs and order, *Decandria Monogynia.*

*Characters*] CALIX is ſmall, five-parted, permanent, and placed under the germen. COROLLA, a ſingle pitcher-ſhaped petal, five-parted, and revolute at the brim. STAMINA, ten ſhort filaments, and bifid antheræ. PISTILLUM, a globular germen, cylindric ſtyle, and thick obtuſe ſtigma. PERICARPIUM, a roundiſh berry of five cells, containing ſmall hard ſeeds.

The ſpecies are,

[1] ARBUTUS *Unedo.*

*Common Arbutus, or Strawberry-Tree.*] Arbutus with an erect tree-like woody ſtem, oblong oval ſmooth leaves, ſawed on the edges, and berries having many ſeeds.

*Varieties of this are,*] Common Arbutus with large oval fruit.——Common Arbutus with round fruit.—Double-bloſſomed Common Arbutus.——Scarlet-flowering Common Arbutus.

[2] ARBUTUS *Andrachne.*

*Andrachne, or Oriental Broad-leaved Arbutus.*] Arbutus with an erect tree-like woody ſtem; oblong, oval, ſmooth leaves, having entire edges; and berries having many ſeeds.

[3] ARBUTUS *Uva Urſi.*

*Uva Urſi, Bear-berry, or Dwarf Arbutus.*] Arbutus with ſhrubby, very branchy ſtalks, about two feet high; oval, thick, ſmooth, entire leaves; greeniſh-white flowers in cluſters at the ends of the branches, and roundiſh berries.

*Varieties.*] *Uva Urſi* with black berries.—*Uva Urſi* with red berries.

All the above ſpecies and reſpective varieties are hardy exotic ever-greens; the two former are of a tree-like growth, and the other is a dwarfiſh ſhrubby plant. They will proſper in any common ſoil of a garden.

They are all cloſely adorned the year round with ſimple leaves, and produce flowers and fruit in ſmall looſe cluſters.

The Common Arbutus and varieties are ſome of the moſt elegant ever-greens of our ſhrubberies; they are natives of Spain, Italy, and ſome parts of Ireland, where they obtain twenty or thirty feet ſtature, with trunks of conſiderable ſubſtance.

Theſe varieties, in this country, often grow twelve or fifteen feet high, aſſuming full and regular heads, and all the young ſhoots a fine red colour, the whole cloſely adorned with moderate-ſized, oblong, ſawed leaves, placed alternate, and the trees are fully garniſhed with them at all ſeaſons, and produce whitiſh flowers in numerous ſmall cluſters annually in October and November, ſucceeded by abundance of ſtrawberry-like fruit; but theſe do not attain maturity in leſs than twelve months, when they aſſume a ſcarlet colour; ſo that thoſe of each year's bloom ripen next year in November, by which means there are annually flowers, and ripe fruit upon the trees at the ſame time; which, together with their numerous leaves on red foot-ſtalks, effects one of the moſt ſingularly beautiful contraſts in nature.

The oval and round fruited varieties are the ſorts moſt commonly cultivated, the former of which rather obtains the largeſt growth, and produces the largeſt flowers and fruit.

The double-bloſſomed kind having only two ſeries of petals; its doubleneſs is not very conſpicuous.

The ſcarlet kind, when in bloom, forms a pretty diverſity, in aſſemblage with the other varieties.

The *Andrachne*, or Oriental Arbutus, aſſumes a larger growth than any of the preceding ſorts, and branches out irregularly; the leaves are large, and with the edges entire, but produces flowers and fruit like the Common Arbutus.

This ſort having fine large leaves, makes a noble appearance at all ſeaſons.

The flowers of all theſe varieties are produced in ſmall looſe cluſters, each ſeparate flower is ſmall, and formed univerſally of a ſingle hollow petal, bellied below, pitcher faſhion; the whole, except the ſcarlet kind, aſſume a greeniſh-white colour, and the fruit ſucceeds the flowers in cluſters.

The fruit are berries, in ſhape, ſize, and colour reſembling large ſcarlet ſtrawberries, though generally much larger, and grow three, four, five, or more in cluſters, remarkably beautiful to appearance, but unpalatable to eat.

The *Uva Urſi* is a ſmall buſhy ſhrub, a native of the mountainous parts of the continent of Europe, and is retained in many gardens for the ſake of variety.

*Uſe in Gardens, Propagation, &c.*

All the varieties of the Common Arbutus and *Arbutus Andrachne*, are ſome of the fineſt ever-greens that can be ſeen, and are well adapted to occupy the moſt conſpicuous places in ſhrubberies, either in aſſemblage towards the fronts of clumps, or to be placed detached on graſs ground.

In whatever mode of planting it is deſigned to employ them, place them ſo much detached as to appear conſpicuous at all times, and permit them to take their own natural growth.

The beſt ſeaſon for tranſplanting all the ſorts, is the end of September, October, and beginning of November, or in March and April.

The propagation of all the ſpecies is effected moſt commonly by ſeed; they will alſo ſometimes grow by layers and cuttings, though rather reluctantly; but the ſeed grows freely, and from which the handſomeſt plants are always obtained. Obſerve however, that, to continue the double-bloſſomed and ſcarlet kinds with certainty, it muſt be effected either by layers, cuttings, grafting, or inarching; for theſe varieties will not retain their difference from ſeed.

From the ſeed of either the common oval and round fruited kinds, ſome of both ſorts may be expected; that of the former is rather to be preferred for ſowing.

The berries containing the ſeed may be had of the nurſerymen in October, November, and December; and the ſeed may either be then ſown in pots, and ſheltered in a frame all winter, or may be preſerved in dry ſand until March, and then ſown in pots of light earth, and covered about a quarter of an inch deep; then, if the pots are plunged in a hot-bed, it will ſo greatly forward the germination of the ſeed that the plants will riſe in a month or ſix weeks, when they muſt have plenty of air, moderate waterings, and by de-

grees

grees inured to the full air, when the pots ſhould be plunged in the common ground until October, and then placed in a green-houſe or frame, to have ſhelter from froſt, till March; at which time it is adviſeable to tranſplant the ſeedlings ſingly in ſmall pots, which, if directly plunged upon a ſlender hot-bed, ſhielded and ſhaded occaſionally with mats, giving moderate waterings, they will quickly take root and ſet to growing, when the pots may be plunged in a bed of common earth in a ſheltered place, to remain two or three years, indulging the plants with larger pots, and protection from ſevere froſt, till they are about two feet high; then tranſplant them, with the balls of earth about their roots, into the full ground.

To propagate them by layers, it muſt be performed on the young ſhoots, which rarely emit roots in leſs than two years.

Cuttings will emit roots by the aid of heat. Plant a number of the ſhort young ſhoots in pots, and plunge them in a ſubſtantial hot-bed of tan or dung.

Inarching or grafting them is performed in the uſual way, upon ſtocks of any of the varieties.

ARCTOTIS.

This genus conſiſts of four ſhrubby perennials, of tall and very branching growth, and an herbaceous acaulis plant, all flowery exotics of the green-houſe.

Claſs and order, *Syngeneſia Polygamia Neceſſaria.*

*Characters.*] CALIX, is a round, imbricated, ſcaly cup. COROLLA, is compound and radiated; the middle compoſed of numerous male, funnel-ſhaped, five-parted, reflexed florets, and many long, flat, female florets compoſe the border or radius. STAMINA, in each male floret are five filaments, having ſhort antheræ. PISTILLUM, in the female florets, a trigonous downy germen, ſimple ſtyle, and two oval ſtigma. PERICARPIUM none, and a ſingle ſeed in each female floret.

The ſpecies are,

[1]ARCTOTIS *Aſpera.*

*Rough-leaved Golden Arctotis.*] Arctotis with an upright, branching ſtalk; oblong, deeply ſinuated, winged-like, hairy leaves; the ſegments oblong and indented, and large golden yellow flowers, having a fertile radius.

[2]ARCTOTIS *Anguſtifolia.*

*Narrow-leaved Arctotis.*] Arctotis with an erect, branching ſtalk; narrow, ſpear-ſhaped, ſtiff, entire leaves, indented on the ſides, and pale yellow flowers, having a fertile radius.

[3]ARCTOTIS *Calendula.*

*Sea Ragwort-leaved Arctotis.*] Arctotis with an erect, branching ſtalk; oval, lyre-ſhaped, indented leaves, with blackiſh denticles, and large ſulphur-coloured flowers, having a ſterile radius.

[4]ARCTOTIS *Plantaginea.*

*Plantain-leaved Arctotis.*] Arctotis with an upright, branching ſtalk; ovate-ſpear-ſhaped, indented, nervous, running leaves, embracing the ſtalk; and large golden yellow flowers, having a fertile radius.

[5]ARCTOTIS *Acaulis.*

*Stalkleſs Dwarf Arctotis.*] Arctotis without ſtalk, lyre-ſhaped, ſinuated leaves from the root, the foot-ſtalks of the flowers riſe between the leaves, ſupporting large golden flowers.

The four firſt ſpecies obtain four or five feet ſtature, having erect, thick, ſhrubby-like, perennial ſtems, which divide into many luxuriant tender branches, terminated by large, compound, radiated, yellow flowers, appearing in ſummer, and often continue in ſucceſſion during autumn and winter, and make a pretty appearance.

The *Arctotis Acaulis* is a low plant, the flower-ſtalks rarely exceed ſix inches in height, but ſupport fine large radiated flowers in April or May, and often afford ripe ſeeds.

They are all exotics of Africa, and require the protection of a green-houſe in winter, ſo muſt always be kept in pots.

The propagation of the ſhrubby ſorts is eaſily effected by cuttings of the branches or ſhoots any time the beginning of ſummer, either in pots, or a bed of light earth, giving occaſional ſhade and water, and they will be rooted in ſix or eight weeks, when they ſhould be planted in ſeparate ſmall pots, and managed as other green-houſe plants.

The dwarf ſort may be raiſed from ſeed in ſpring, and by ſlips from the roots.

ARISTA, the awn, or ſharp beard or point iſſuing from the huſk or ſcaly flower-cup of the graſſes, as that of the common barley and other corn.

ARISTOLOCHIA, Birthwort.

This genus comprehends herbaceous perennial exotics of the common ground and green-houſe, adorned with heart-ſhaped leaves, and monopetalous tubular flowers, retained in our gardens for variety, and are alſo eſteemed for their eminent virtues in medicine, and are accounted ſovereign in child-birth, as the name imports.

Claſs

Claſs and order, *Gynandria Hexandria.*

*Characters.*] CALIX none. COROLLA is monopetalous, tubular, and irregular, the baſe is globular, and is extended above into a cylindrical tube ſpreading at the brim, where the lower part is ſtretched out like a tongue. STAMINA, no filaments, but ſix antheræ joined to the under part of the ſtigma. PISTILLUM, an oblong triangular germen under the corolla, no ſtyle, but a roundiſh ſix-parted ſtigma. PERICARPIUM, a large oblong capſule of ſix cells, filled with depreſſed ſeeds.

The ſpecies that demand attention are the following.

The firſt four are hardy, herbaceous, perennial-rooted plants, with annual ſtalks.

[1]ARISTOLOCHIA *Rotunda.*

*Round-rooted Trailing Birthwort.*] Ariſtolochia with a roundiſh root; infirm trailing ſtalks, two feet long; heart-ſhaped roundiſh leaves, ſitting cloſe; and blackiſh-purple ſolitary flowers.

[2]ARISTOLOCHIA *Longa.*

*Long-rooted Trailing Birthwort.*] Ariſtolochia with a long carrot-ſhaped root; infirm trailing ſtalks, eighteen inches long; heart-ſhaped blunt leaves, having foot-ſtalks; and purpliſh ſolitary flowers.

[3]ARISTOLOCHIA *Serpentaria.*

*Virginia Snake-root.*] Ariſtolochia with infirm, flexible, procumbent ſtalks, a foot and half long; heart ſhaped, oblong, plane leaves; and recurved, reddiſh, ſolitary flowers.

[4]ARISTOLOCHIA *Clematitis.*

*Upright Heart-leaved Birthwort.*] Ariſtolochia with very creeping roots; erect firm ſtalks, eighteen inches high; heart-ſhaped leaves, having long foot-ſtalks; and pale yellow flowers in cluſters.

The three following are perennial-ſtalked exotics of the green-houſe.

[5]ARISTOLOCHIA *Sempervivens.*

*Ever-green Trailing Birthwort of Crete.*] Ariſtolochia with infirm, angular, trailing ſtalks, eighteen inches long; heart-formed, oblong, waved leaves; and long, recurved, dark purple, ſolitary flowers.

[6]ARISTOLOCHIA *Piſtolochia.*

*Piſtolochia, or Small Ramoſe-ſtalked Birthwort.*] Ariſtolochia with infirm branching ſtalks, heart-ſhaped ſlightly crenated leaves, having foot-ſtalks, and ſolitary flowers.

[7]ARISTOLOCHIA *Arboreſcens.*

*Shrubby Upright Virginia Birthwort.*] Ariſtolochia with ſhrubby erect ſtalks, two feet high; heart-formed ſpear-ſhaped leaves, and ſolitary flowers.

The four firſt ſpecies are hardy, have perennial roots, but the ſtalks are renewed annually in ſpring; which, of the firſt, ſecond, and third ſorts, if not ſupported, proſtrate themſelves upon the ground; but the *Ariſtolochia Clematitis* ſtand erect: all of which are adorned with the leaves in alternate order, and flowers proceeding from the ſides of the ſtalks at the angles of the leaves, in June and July, ſucceeded by ripe ſeed in autumn.

For purpoſes in gardens, theſe four ſorts are conſidered chiefly as plants of variety, or for obſervation, for as flowering plants they cut no great figure.

As medical plants they are poſſeſſed of eminent virtues, being very ſalutary in many diſorders, particularly the roots of the *Ariſtolochia Rotunda* and *Ariſtolochia Longa*, which are alſo remarkable for their drawing properties, inſomuch that a poultice of them will extract thorns or ſplinters from the fleſh in any part of the body; and the root of the *Serpentaria* or Snake-root is a cure for the bite of the rattle-ſnake of America, and all other noxious ſerpents and venomous animals: theſe, as well as the others, are efficacious in many other caſes. They are imported from abroad to ſupply the ſhops, for they are not cultivated here in ſufficient quantity for general uſe, though from ſeed a few plants may be eaſily obtained in our gardens.

The Ever-green *Ariſtolochia*, the *Piſtolochia*, and Shrubby Virginia Birthwort, are ſmall exotic perennials of the green-houſe, durable in root and ſtalks; the two former being of very infirm and flexible growth, require ſupport; but the ſtalks of the other, being more ſhrubby and firm, ſupport themſelves erect; all of which produce flowers ſingly from the angles of the leaves in ſummer, but rarely any ſeed in England.

The flower of all the ſorts is formed of a ſingle hollow, tubular, irregular petal. See the *Characters.*

*Propagation.*

The propagation of the three firſt ſorts is by ſeed ſown in autumn, ſoon after they are ripe, i. e. in September or October, in pots of light earth, which muſt be placed in a garden-frame to have occaſional protection from froſt, and in ſpring the plants will appear; but if the pots are plunged in a moderate hot-bed in March, it will forward them exceedingly, obſerving to inure them by degrees to the

the full air, giving water during ſummer, and ſhelter of a frame in winter, and next ſpring tranſplant them, ſome into a warm border, and ſome in ſmall pots, to have another winter's occaſional ſhelter, which, in ſpring after, may alſo be turned out into the common ground.

The *Ariſtolochia Clematitis* multiplies exceedingly by its creeping roots, by which it may be encreaſed at almoſt any ſeaſon.

The green-houſe kinds may be propagated by ſeeds procured from abroad, and ſown in pots of light earth, and plunged in a hot-bed in March; they may alſo be encreaſed by ſlips of the roots in ſpring, likewiſe by cuttings, particularly the Shrubby Birthwort; all of which, after being raiſed in ſpring and ſummer, muſt be potted in autumn, and houſed every winter.

ARMA, Arms, Armature, or Offenſive Weapon, or Armour of Plants, intended by nature, ſay naturaliſts, to keep off naked animals that would approach to hurt them.

There are different ſpecies of Armour with which plants are furniſhed, and are by botaniſts called, *Aculeus*, prickles, ſuch as thoſe of the roſe and raſpberry, &c. *Spina*, ſpine, or thorns, as the hawthorn, buckthorn, falſe acacia, &c. *Furcæ*, forks, ſpecies of prickles, conſiſting of two or three prongs, as berberry, fig, marigold, &c. *Stimula*, ſtings, as nettle, &c. See ACULEUS, SPINA, FURCÆ, and STIMULA.

AROMATICÆ *Planta*. Aromatic Plants are odoriferous, or of a ſtrong, fragrant, agreeable ſmell and taſte, generally warm and cordial; they are chiefly herbaceous, and their virtue reſides in the leaves.

Several Aromatics are in great eſteem, both for kitchen and medical purpoſes.

The principal ſorts are,

Summer Savory—Winter Savory—Hyſſop—Thyme—Sweet, or Knotted Annual Marjoram—Winter, or Perennial Pot Marjoram—Red or Common Sage—Green Sage—Sage of Virtue—Baum—Spear-mint—Peppermint—Pennyroyal—Clary—Lavender—and Roſemary.

All theſe Aromatics are ſo uſeful in the œconomy of domeſtic affairs, that they ſhould have places in every kitchen-garden, and their culture is remarkably eaſy. See their reſpective genera.

To the above may be added, Baſil, Chervil, Coriander, Dill, Fennel, and Tanſey.

For other Aromatics, ſee MEDICAL PLANTS, POT-HERBS, and VERTICILLATÆ.

ARTEMISIA, Mugwort, comprehending alſo the ſpecies of *Abſinthium*, or Wormwood, and *Abrotanum*, the Southernwood.

This genus is very comprehenſive, and retains both herbaceous perennials and ſhrubby plants of the common ground and greenhouſe, for medical uſe and variety in gardens, adorned principally with finely divided leaves, and ſmall compound flowers, of no beauty, in ſpikes or cluſters.

Claſs and order, *Syngeneſia Polygamia Superflua*.

*Characters.*] Compound flowers. CALIX, the general cup roundiſh and ſcaly. COROLLA, many hermaphrodite florets compoſe the middle, and females the border. STAMINA, in each hermaphrodite floret five filaments. PISTILLUM, a germen and ſtyle in the florets of both ſorts, and bifid ſtigma. PERICARPIUM none, a ſingle naked ſeed ſucceed each germen.

There are upwards of twenty ſpecies, thoſe cultivated for uſe and ornament are,

[1]ARTEMISIA *Vulgaris*.

*The Common Mugwort.*] Artemiſia with pinnatifid, many-parted, plain leaves, downy underneath, and erect firm ſtalks riſing among the leaves, two feet high, each terminated by a long ſimple ſpike of ſmall purpliſh flowers; the radius compoſed of five florets.

*Varieties of this.*] Common Plain-leaved Mugwort.—Silver Striped-leaved Common Mugwort.—Gold-ſtriped Mugwort.

[2]ARTEMISIA *Abſinthium*.

*Abſinthium, or the Common Wormwood.*] Artemiſia with compound, many-parted, finely divided, whitiſh leaves; ſhrubby ſtalks growing two feet high, cloſely adorned with leaves, and globular heads of flowers, hanging from the ſides of the ſtalks.

[3]ARTEMISIA *Pontica*.

*Pontic, or Roman Wormwood.*] Artemiſia with multi-parted, very finely divided leaves, hoary underneath, herbaceous ſtalks, growing a foot and half long, covered with leaves, and globular heads of yellow flowers, nodding from the ſides of the ſtalks.

[4]ARTEMISIA *Maritima*.

*Sea Wormwood.*] Artemiſia with multiparted, divided, very downy leaves, ſhrubby ſtalks, two feet high, adorned with leaves, and drooping alternate ſpikes of flowers from the ſides of the branches.

[5]ARTEMISIA *Arboreſcens*.

*Tree*

*Tree Wormwood.*] Artemiſia with an erect, woody, branching ſtem, grows ſix feet high; leaves compoſed of multifid, linear, very hoary, whitiſh ſegments; and flowers collected into roundiſh heads at the ends of the branches.

6 ARTEMISIA *Abrotanum.*

*Abrotanum, or Common Southernwood.*] Artemiſia with ſhrubby, erect, very branchy ſtalks, three feet high; fine branchy, briſtly, odoriferous leaves, and all the ſtalks and branches terminated by long ſpikes of flowers in autumn.

7 ARTEMISIA *Dracunculus.*

*Tarragon.*] Artemiſia with ſpear-ſhaped, entire, ſmooth leaves, and annual ſhoots.

The flowers of all theſe ſpecies are compound (ſee the *Characters*), very numerous, though ſmall, and of no beauty.

The *Artemiſia Vulgaris* and Common Wormwood are wild inhabitants of uncultivated places, by road ſides, bye lanes, banks, and under walls and hedges about country villages; but being efficacious in medicine, are often cultivated in gardens, where they are alſo ſometimes admitted as plants of variety or obſervation, particularly the variegated Mugworts.

The Roman Wormwood is an exotic of Hungary and Thrace, but is retained in our gardens for variety and uſes in medicine.

The Sea Wormwood inhabits the ſea-ſhores of England, and is ſometimes admitted in gardens for variety, and as a medical plant.

The above four ſpecies flower in June, July, and Auguſt, and ripen abundance of ſeed.

They may be raiſed abundantly from ſeed, in almoſt any ſituation or ſoil; and by ſlips, cuttings, and by parting their roots in autumn or ſpring.

The Tree Wormwood is an exotic of Italy; it is a hoary ever-green, and conſidered here principally as a green-houſe plant, although it will often ſucceed in the full ground, and by its hoary whitiſh leaves make a pretty appearance any where. It is propagated by cuttings in a ſhady border, in April, May, and June; and in autumn ſome ſhould be potted for ſhelter in winter, and ſome may ſtand to take their chance in the full ground.

The Southernwood is one of our ſmalleſt hardy deciduous ſhrubs, will grow any where, and affords variety in common borders and the fronts of ſhrubbery clumps.

This little ſhrub is in great repute about London, and the gardeners about that city raiſe vaſt quantities of them annually, training them about a foot high, with roundiſh buſhy heads, for which they find a ready ſale in Covent-garden and Newgate markets; the inhabitants buying them to place in their court-yards, balconies, and windows, in aſſemblage with other hardy plants that bear the ſmoak.

It is propagated with facility by ſlips and cuttings of its branches, in a ſhady border in April; and as many ſmall ſtems riſe from the root, theſe may be ſlipped or divided into as many parts as are furniſhed with the leaſt fibre, and plant them in an open bed in rows nine inches diſtance, they will form handſome plants after one ſummer's growth.

The Tarragon, being warm and fragrant, is uſed as a ſallad herb; it is perennial, and propagated by its creeping roots, or cuttings of its young ſhoots in April and May.

ARUM, Wake-Robin, or Cuckow-Pint.

The plants are herbaceous perennials of the common borders and ſtove, moſtly acaulis, i. e. no ſtalk, but riſe with large leaves directly from the root; though ſome are cauliſcent, and between the leaves riſe a large ſpadiceous, apetalous, club-ſhaped flower, of ſingular ſtructure.

Claſs and order, *Gynandria Polyandria.*

*Characters.*] CALIX, is a large monophyllous ſpatha, compreſſed in the middle, and coloured within. COROLLA, no petals, but a large ſimple, club-ſhaped, coloured ſpadix, upon which are placed the germina. STAMINA, no filaments, but numerous four-ſquared antheræ ſitting cloſe to the ſpadix, with a double row of hair-like nectaria between them. PISTILLUM, numerous oval germina furround the ſpadix, no ſtyles, but many bearded ſtigma. PERICARPIUM, many globular berries of one cell, and many roundiſh ſeeds.

There are twenty or thirty ſpecies, one of which grows naturally in England; all the others are exotics of many different parts of the world, ſeveral of which are retained in our gardens: theſe are,

1 ARUM *Maculatum.*

*Common Spotted Arum.*] Arum without ſtalk, halbert-ſhaped entire leaves from the root, and among them riſes a ſhort foot-ſtalk, crowned by a large club-ſhaped ſpadix.

*Varieties of this.*] Common Arum with dark ſpotted leaves——with white ſpotted leaves——with white and black ſpotted leaves——with entirely green leaves.

2 ARUM

[2]ARUM *Italicum.*

*Italian White-veined-leaved Arum.*] Arum without ſtalk; large, halbert-ſhaped, white-veined leaves, running out to a ſharp point, riſe from the root a foot and half high, on long foot-ſtalks, and a large erect whitiſh ſpatha riſes between the leaves, near a foot in height.

[3]ARUM *Ariſarum.*

*Ariſarum, or Broad-leaved Friar's Cowl.*] Arum without ſtalk; heart-ſhaped oblong leaves from the root, and between them is the flower, growing cloſe to the ground, having a bifid ſpatha and incurved ſpadix.

[4]ARUM *Dracunculus.*

*Dracunculus, or Common Spotted Dragon.*] Arum with an erect thick ſtalk, a yard high, finely ſpotted like a ſnake's belly, dividing at top into palmated leaves, having ſpear-ſhaped, equal, entire lobes, and between them proceed a long erect purple ſpatha, protruding a large erect, club-ſhaped, purple piſtil, or ſpadix, ſhorter than the ſpatha.

[5]ARUM *Colocaſia.*

*Colocaſia, or Ægyptian Arum.*] Arum without ſtalk; large target-ſhaped ovate leaves from the root, two-parted at the baſe, and with ſinuated waved borders.

[6]ARUM *Trilobatum.*

*Trilobate, or Three-lobed Indian Arum.*] Arum without ſtalk; leaves from the root, compoſed of three arrow-pointed lobes, and between them riſe the flower on a ſhort foot-ſtalk, having a long ſpatha and ſcarlet ſpadix.

[7]ARUM *Arboreſcens.*

*Tree American Arum, or Dumb Cane.*] Arum with an erect jointed ſtalk, ſix feet high, arrow-ſhaped leaves in cluſters at top, and the flowers riſe between the leaves in long green ſpathæ, ſitting cloſe to the ſtem.

All theſe plants are herbaceous, perennial in root, but moſtly annual in leaf and ſtalk, which riſe in ſpring, flower in April, May, and June, ripen ſeeds ſoon after, and die to the ground in autumn.

The roots are moſtly thick, fleſhy, and multiply conſiderably.

The leaves are large and broad, and ſome are very beautiful.

The flower-ſtalks of all the ſorts ſupport a ſingle ſpatha or ſcabbard, protruding the flowers, having no petals, but a large red or purple ſpadix or piſtillum, elevated like a column, which is ſucceeded by a cluſter of berries, containing the ſeeds; but very few of theſe plants ripen ſeed in this country.

The *Arum Maculatum* is a reſident of our woods and banks under hedges, but the plants are admitted for variety in pleaſure grounds, in aſſemblage with the other hardy ſorts; but the ſpotted kinds of them have moſt merit, and form an agreeable diverſity.

The ſecond and third ſorts are exotics, though of hardy growth, and have been long entertained in curious gardens for their ſingular appearance.

The *Arum Dracunculus* is a hardy plant, of ſo ſingular and auguſt appearance, that it deſerves a place in every collection of herbaceous perennials, although the ſtrange ſingularity of its maculated ſnake-like ſtem is diſagreeable to ſome, and its flower emits a diſagreeable odour.

All the above four ſpecies ſucceed in any of the common borders.

The fifth, ſixth, and ſeventh ſorts are exotics of hot climates, and are preſerved here in ſtoves as plants of curioſity.

*Propagation.*

The propagation of all the ſorts is eaſily accompliſhed, and moſtly by parting the roots.

The firſt ſix ſorts encreaſe greatly by their roots, and the off-ſets may be ſeparated, or the whole root divided in autumn, after they have flowered, or early in ſpring; thoſe of the hardy kinds are to be planted in the borders, and the tender ſorts in pots, and retained in the ſtove.

Thoſe of the hardy ſorts that ripen ſeeds may alſo be raiſed by ſowing them in pots in autumn, and if thoſe are plunged in a hot-bed in March, juſt to bring up the plants, it will forward them greatly.

The Tree Arum is propagated by cuttings of its ſtalk, three joints in length, which, after having lain four or five weeks, till the cut part is healed, plant them ſeparately in pots, and plunge them in the ſtove.

ARUNDO, the Reed.

The plants are moſtly herbaceous perennials, ſome of which riſe with herbaceous ſtalks, from three to twelve feet high; others have tree-like ſtems, advancing with amazing rapidity of growth to thirty or forty feet in height.

Claſs and order, *Triandria Digynia.*

*Characters.*] CALIX is a glume, or huſky ſcale of two valves. COROLLA, two acuminated huſky valves, downy at the baſe. STAMINA, three filaments, and horned antheræ. PISTILLUM, a germen, two reflexed ſtyles,

and ſimple ſtigma. PERICARPIUM none, and the ſeed is ſingle.

The plants are of the graſs tribe, and produce their flowers in ſpikes, which have no beauty.

The ſpecies of note are,

[1]ARUNDO *Phragmites.*

*The Common Marſh Reed.*] Arundo with ſlender erect ſtalks, ſix or eight feet high, terminated by looſe panicles of flowers, growing five in each cup.

[2]ARUNDO *Donax.*

*Donax, or Portugal Reed.*] Arundo with large erect ſtems, ten or twelve feet high, terminated by diffuſe panicles of flowers, growing three in each cup.

[3]ARUNDO *Verſicolor.*

*Variegated Indian Reed.*] Arundo with erect firm ſtalks, four or five feet high, adorned with variegated leaves, and terminated by diffuſe panicles of flowers.

[4]ARUNDO *Bamboa.*

*Bambu-Cane, or Great Indian Reed.*] Arundo with a very large erect ſtem, growing thirty or forty feet high, adorned with very large, long, and pointed leaves, and ſeſſile ſpikes, having many flowers in a cup.

The firſt three ſorts are hardy, but the Bambu-Cane cannot live in our climate, unleſs it is indulged with a place in the hot-houſe.

The *Arundo Phragmites* or Common Reed is an inhabitant of our river ſides, and ſtanding waters, all over the kingdom, ſo is rarely admitted in gardens. This ſpecies growing in great abundance in marſhy ſituations, and the roots ſending up an annual crop of ſtalks, are, in many places, conſtantly cut in autumn, and tyed in bundles for ſale, being uſeful for various purpoſes, ſuch as thatching houſes, &c. and among gardeners, they are employed in forming ſhelters, called reed-hedges, being cheap, and quickly made ſhelter for young and tender plants in winter, both in nurſeries and large kitchen grounds, ſee REED-HEDGES, and for which, and many other uſes, great quantities are brought in barges up and down the river Thames to London, where they may be purchaſed in the warehouſes contiguous to the river.

The Portugal or Spaniſh Reed is retained in many of our gardens for its ſingular lofty growth; it proſpers in any common ſoil of a garden: the ſtalks riſe annually in ſpring, frequently from three to twelve from the ſame root; they are large and jointed, and attain ten or twelve feet ſtature in three or four months, adorned with large long leaves at the joints, but it rarely flowers here.

The Variegated Indian Reed, is, in its general habit, the ſame as the Portugal kind, only the whole plant is of much ſmaller growth.

Both theſe ſorts are eaſily propagated by dividing their roots in February or March, before they begin to ſhoot forth new ſtalks, and the ſlips will ſhoot the ſame ſeaſon, though not with vigour until the ſecond or third year.

The ſtalks may be cut down every autumn, and uſed as walking-ſticks, &c.

The *Arundo Bamboa* is a native of both Indies, and is retained here in our ſtoves as a plant of ſingularity; in its native ſoil it grows forty feet high, and attains conſiderable ſubſtance, and even in our hot-houſes, where there is room, they often grow at the aſtoniſhing rate of twenty feet in ſix weeks; the ſtems of theſe Canes are uſed here for walking-ſticks, fiſhing-rods, &c. but in India the large ones are employed for various purpoſes, and the leaves being very large and long, are ſkewered together to form mats for package, ſo arrive here in tea-cheſts, &c. and we often ſee them in the ſtreets thrown out of the grocer's ſhops.

The propagation of this Cane is eaſily accompliſhed by taking off ſlips from the roots in February or March, planting them in large pots, which plunge in the bark-bed in the hot-houſe, where they are always to remain.

As they grow naturally in marſhy places, they muſt be plentifully watered.

ASARUM, *Aſarabacca.*

The plants are low herbaceous perennials, adorned with ſimple leaves and apetalous flowers, which riſe but very little from the ground, and are retained in gardens for variety, and ſome as medical herbs.

Claſs and order, *Dodecandria Monogynia.*

*Characters.*] CALIX is monophyllous, bell-ſhaped, coloured, three-parted, and reflexed at the brim. COROLLA none. STAMINA, twelve filaments, and oblong antheræ. PISTILLUM, a germen, cylindric ſtyle, and ſix-parted ſtigma. PERICARPIUM, a leathery capſule of ſix cells, having oval ſeeds.

The ſpecies are,

[1]ASARUM *Europæum.*

*European, or Common Engliſh Aſarabacca.*] Aſarum with kidney-ſhaped, bluntly two-pointed, ſhining leaves, riſing from the root

on

on ſhort foot-ſtalks, and among them purple flowers, cloſe to the ground.

[2]ASARUM *Canadenſi.*

*Canada Aſarabacca.*] Aſarum with large kidney-ſhaped, pointed, hairy leaves from the root, on long foot-ſtalks, and among them greeniſh flowers, ſitting cloſe to the ground.

[3]ASARUM *Virginicum.*

*Virginian veined-leaved Aſarabacca.*] Aſarum with heart-ſhaped, rounded, ſmooth, veined, and ſpotted leaves from the root, on very long foot-ſtalks, and dark purple flowers elevated among the leaves.

They are all hardy, herbaceous, fibrous-rooted perennials, whoſe leaves and flowers riſe directly from the root, and grow near the ground; the flowers of the firſt and ſecond ſorts having very ſhort foot-ſtalks, are inſufficient to elevate them above the leaves, but thoſe of the third being much longer, the flowers are more conſpicuous.

They flower in May, and ripen ſeeds in Auguſt.

The flowers are univerſally apetalous, ſo conſiſt only of the bell-ſhaped coloured calix. See the *Characters.*

Conſidered as plants of ornament, they make no great figure; but as plants of ſingularity in their flowers, mode of flowering, &c. they merit places in the front of borders, and other compartments, among plants of loweſt growth.

As medicinal plants, the Common Aſarum is the ſort preſcribed, and is efficaceous in many diſorders.

The propagation of all theſe three ſpecies is by parting their roots in autumn or ſpring.

ASCLEPIAS, Swallow-Wort, comprehending alſo ſeveral ſorts of Dog's-Bane, removed by Linnæus from the genus *Apocynum.*

This genus furniſhes a choice collection of tall flowery perennials, both herbaceous and ſhrubby, of the full ground, green-houſe, and ſtove, obtaining from two to ſeven feet ſtature, ornamented with ſimple leaves and monopetalous flowers, in cluſters.

Claſs and order, *Pentandria Digynia.*

*Characters.*] CALIX is monophyllous, and five-parted at the brim. COROLLA, a ſingle petal cut into five oval ſegments, and five horned nectaria encompaſs the fructification. STAMINA, five ſcarcely viſible filaments, and five antheræ ſituated between the nectaria. PISTILLUM, two oval germina, two ſhort ſtyles, and ſingle ſtigmas. PERICARPIUM, two large oblong ſwelling pods, having compreſſed ſeeds.

The following ten ſpecies are thoſe chiefly known in the Engliſh gardens; the firſt eight of which are herbaceous and hardy.

[1]ASCLEPIAS *Vincetoxicum.*

*Vincetoxicum, or Common White Swallow-Wort.*] Aſclepias with erect jointed ſtalks, growing two feet high; oval leaves by pairs, bearded at the baſe; and white flowers in branching cluſters near the top of the ſtalks.

[2]ASCLEPIAS *Nigra.*

*Black-flowered Swallow-Wort.*] Aſclepias with ſlender ſtalks, riſing three feet high, twining at top; oval ſpear-ſhaped oppoſite leaves, by pairs, bearded at the baſe; and black flowers in branchy cluſters from the upper part of the ſtalks.

[3]ASCLEPIAS *Lutea.*

*Yellow Swallow-Wort.*] Aſclepias with infirm ſtalks, two feet long, narrow oval acute leaves, and yelloviſh flowers in ſimple cluſters near the top of the ſtems.

[4]ASCLEPIAS *Syriaca.*

*Syrian Broad-leaved Purple Dog's-Bane.*] Aſclepias with very creeping roots, ſending up ſtrong erect ſimple ſtems, four feet high, having large oval thick leaves, by pairs, downy underneath, and purpliſh flowers in nodding cluſters near the top of the ſtems.

[5]ASCLEPIAS *Purperaſcens.*

*Purpliſh Carolina Dog's-Bane.*] Aſclepias with erect ſtalks growing a yard high, adorned with oval leaves, by pairs, hairy underneath, and the ſtems terminated by erect umbels of purpliſh flowers, having declinated nectaria.

[6]ASCLEPIAS *Verticillata.*

*Whorled-leaved Maryland Aſclepias.*] Aſclepias with erect ſlender ſtems, two feet high, narrow revolute leaves placed in whirls round the ſtalk, and the ſtalks crowned by umbels of white flowers.

[7]ASCLEPIAS *Decumbens.*

*Declinated Orange-coloured Virginia Dog's-Bane.*] Aſclepias with declinated hairy ſtalks, a foot and half long, garniſhed with oval hairy oppoſite leaves, and the ſtalks terminated by compact umbels of orange-coloured flowers.

[8]ASCLEPIAS *Tuberoſa.*

*Tuberous-rooted Erect Orange-coloured American Dog's-Bane.*] Aſclepias with a large tuberous root, erect divaricating hairy ſtalks, about two feet high, adorned with ſpear-ſhaped hairy alternate leaves, and the ſtalks ſurmounted by umbels of orange-coloured flowers.

The following is a green-houſe plant.

9 ASCLEPIAS *Fruticoſa.*

*Shrubby Aſclepias.*] Aſclepias with ſhrubby erect very branchy ſtems, growing ſix or eight feet high, all the branches cloſely garniſhed with long ſpear-ſhaped ſmooth leaves, and white flowers in ſingle looſe umbels, on long foot-ſtalks, from the ſides of the branches.

The following is a ſtove plant.

10 ASCLEPIAS *Curaſſavica.*

*American Scarlet Aſclepias.*] Aſclepias with erect ſingle ſtems, riſing five or ſix feet high, ſpear-ſhaped ſmooth oppoſite leaves, having foot-ſtalks, and flowers from the upper parts of the branches, in erect ſingle umbels, having ſcarlet petals, and ſaffron-coloured nectaria.

All theſe plants are exotics principally of America, and are retained here in moſt of our curious gardens as plants of ornament.

The firſt eight ſpecies are hardy herbaceous perennials, with fleſhy fibrous abiding roots; but the ſtalks are annual, they riſing in ſpring, attain their full growth in three or four months; flower in June, July, and Auguſt; perfect ſeeds in September, and ſoon after the whole dies down to the ground.

Ripe ſeed however is only to be expected here principally from the firſt four ſorts, and ſometimes from the *Aſclepias Decumbens* and *Tuberoſa.*

The above eight hardy ſpecies are elegant furniture for the pleaſure ground; they will ſucceed in the common borders, and may be employed in the embelliſhment of the ſhrubbery clumps, diſpoſing them towards the front, and their general culture is the ſame as other hardy herbaceous perennials. See HERBACEOUS PLANTS.

Obſerve however that as the two Orange Dog's-Banes are ſometimes affected by ſevere froſt, it is eligible to allow them a warm dry ſituation, alſo to pot ſome of each for ſhelter in winter.

The *Aſclepias Fruticoſa*, and the American Scarlet Aſclepias are tender exotics; the former that of the green houſe, and the latter of the ſtove. Theſe are elegant plants, and remarkably beautiful when in flower, which is generally from about Midſummer until October, and they frequently afford us ripe ſeed for their propagation. They muſt always be cultivated in pots, and the former ſort placed in a green houſe in winter, and the other muſt be retained always in the ſtove; and as they are milky plants, ſhould be very ſparingly watered in winter.

The flowers of all theſe ten ſpecies are produced in umbellated cluſters; each ſeparate flower is rather ſmall, and formed of one leaf or petal, and five horned nectaria. See the *Characters.*

*Propagation of all the Species.*

The firſt ſix ſpecies are propagated plentifully by dividing the roots in autumn, when the ſtalks decay; or in ſpring, before new ones begin to ſhoot forth.

They may alſo be raiſed from ſeed in a bed of common earth, in March and April.

The ſeventh and eighth ſorts are propagated principally by ſeeds in pots of light earth in ſpring, plunging them in a hot-bed, and when the plants appear, inure them by degrees to the full air; then prick them upon a ſheltered border, ſix inches apart, giving occaſional ſhade and water; alſo ſhelter from froſt in winter by covering the bed with litter or mats, and in March tranſplant them where they are to remain.

The Shrub Aſclepias is propagated by ſeed and by cuttings. By ſeed, ſow them in pots of light compoſt in March or April, and plunge them in a hot-bed, and when the plants are three inches high, prick them in ſeparate ſmall pots, giving ſhade and water. By cuttings, plant them in pots any time from March till Midſummer; move them to the ſhade, and give water, and in autumn they will be rooted, when they are to be ſeparately potted, moving the whole to the green-houſe in October.

The tenth ſort is alſo raiſed from ſeed in a hot-bed; when the plants are three inches high, prick them in ſeparate pots, and plunge them directly in the hot-houſe.

ASHES, for Manure to Land.

Aſhes, as manure or dreſſing to land, may be applied to conſiderable advantage in cold, heavy, inactive ſoils.

There are ſeveral ſorts of Aſhes uſed in the improvement of land, ſuch as Coal-aſhes, Wood-aſhes, Turf-aſhes, Fern-aſhes, Furze and Heath-aſhes.—Aſhes of all ſorts of burnt vegetables, ſuch as burnt weeds, ſedge, ſtraw, ſtubble, bean-haulms, &c. alſo Pot-aſhes, and Soap-aſhes from the ſoap-boilers.

All theſe ſorts of Aſhes are of particular utility in the improvement of cold, wet, ſtubborn land, to warm, open, and looſen the mould, and augment its vegetable and prolific quality.

Coal-aſhes are particularly efficacious in the meliorating and fertilizing all cold, ſtiff, or

or clayey ſoils, in gardens or fields, and in graſs ground of the above quality; they have a great effect in preventing the rankneſs and coarſeneſs of the graſs peculiar to ſuch ſoils, by making it come finer, and rendering it more ſweet for cattle to feed on.

ASH-KEYS, the fruit, or ſeed-veſſel, of the Aſh-tree. See FRAXINUS.

ASPARAGUS, *Aſparagus*, falſely called Aſparragraſs.

The common Aſparagus is one of our choiceſt eſculents of the ſpring and beginning of ſummer, and highly merits culture in every garden.

But beſides the common Garden Aſparagus, the botaniſts preſent us with nine or ten more ſpecies in the ſame genera, under the title of Aſparagus, which are principally tender ſhrubby exotics of the green-houſe and ſtove; ſeveral of which are retained in our gardens, which we ſhall take notice of after the culture of the eſculent kind.

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX, none. COROLLA, ſix petals, forming a tube below, and ſpread at top. STAMINA, ſix ſhort filaments, and roundiſh antheræ. PISTILLUM, a trigonous germen, very ſhort ſtyle, and prominent ſtigma. PERICARPIUM, a globoſe berry, of three cells, each having two roundiſh ſeeds.

We ſhall firſt of all proceed in the culture of the common Aſparagus, and the following is the ſpecies.

ASPARAGUS *Officinalis.*

The *Officinal, or Common Aſparagus.*] Aſparagus, with an erect herbaceous ſtalk, three or four feet high, and very fine briſtly leaves.

This is a perennial fibrous-rooted plant, the roots being of many years duration, but the tops or ſtalks are annual, and the plants being raiſed from ſeed, they, after having acquired a period of three years growth, produce proper ſized Aſparagus, and of which, the ſame roots furniſh an annual ſupply for many years, continuing to riſe in perfection for ſix or eight weeks each ſummer; then the ſhoots run up to ſtalks, flower, and perfect ſeeds in autumn.

It is the young ſhoots, or ſtalks, of the plant that are uſed, which, when from about one, to four or five inches long above the ſurface of the ground, are in the greateſt perfection.

The natural ſeaſon of theſe plants for uſe is, from about the beginning of May, until the middle or latter end of June. For about the fourth week in April, or firſt in May, the roots begin to ſend up ſhoots or buds, and as often as theſe are gathered, new ones continue riſing in ſucceſſion from the ſame roots; but in order to preſerve the roots in vigour, it is adviſeable to leave off cutting the buds about the third or fourth week in June. The common rule is, to continue cutting about ſix or ſeven weeks, then permit the whole to run up to ſtalk.

But beſides the crop of natural Aſparagus in ſummer, it may alſo be obtained in perfection in winter, and early in ſpring, by the aid of hot-beds. See the *Method of forcing Aſparagus.*

*Propagation of the Plants.*

The propagation of Aſparagus is by ſeed only, which is ſold cheap enough at all the ſeed ſhops. It is to be ſown in February, or beginning of March, in a four-feet wide bed of rich earth, broad-caſt on the ſurface, and directly tread it in, and rake the ground.

In ſix weeks, or thereabouts, the plants will appear. Keep them clean from weeds all the ſummer, and in winter ſpread a little litter on the ground, to defend the crowns of the roots from froſt, and in ſpring following they will be fit to be tranſplanted, where they are finally to remain, as hereafter directed, which, in two or three years after, will produce Aſparagus fit to gather; for, obſerve, Aſparagus is always three years, at leaſt, from the time of ſowing the ſeed, till the plants obtain ſtrength enough to produce ſhoots of due ſize for the table; that is, one year in the ſeed bed, and two after being tranſplanted; but the ſame plantation will continue producing good Aſparagus ten or twelve years, nay, will even endure fifteen or twenty years; but at that age, the ſhoots will be ſmall, and the whole annual produce inconſiderable; a new plantation ſhould therefore be made once every eight, ten, or twelve years, as you ſhall judge neceſſary.

If you are deſirous to have a new plantation of Aſparagus, fit for uſe, as ſoon as poſſible, you may gain a year, by purchaſing ready raiſed year-old plants of the nurſery-men, or kitchen-gardners, at a ſhilling or eighteenpence per hundred.

But this is only meant for private uſe, as thoſe who raiſe great quantities for ſale, would find it very expenſive to purchaſe roots for large plantations, ſome of which, in the neighbourhood of London, are very extenſive, particularly about Deptford, where ſome of the gardeners have twenty acres of ground employed in Aſparagus.

Method

*Method of Planting.*

The time of year to make a plantation of theſe plants, is any time in March, in common light ground, and at lateſt, the firſt or ſecond week in April; but in cold very moiſt ſoils, from about the twentieth of March to the 15th of April, is the proper time to plant them in ſuch land.

With regard to ſoil and ſituation, the plants ſucceed tolerably in any common pliable ſoil of the kitchen-garden; but it is, however, eligible to allow them a ſpot of the very beſt and richeſt moderately light ground, in one of the open quarters, expoſed to the free air and full ſun; for this is of much importance. Dung muſt be added, ſix or eight inches thick at leaſt, but if ten or twelve the better. The ground is then to be trenched one or two ſpades deep, as you ſhall ſee neceſſary, burying the dung regularly in each trench, obſerving, if you trench but one ſpade deep, bury the dung in the bottom, but if you dig two ſpades, bury it betwixt the firſt and ſecond ſpit, about ten or twelve inches below the ſurface; and if the trenching is performed in winter, or any conſiderable time before the planting ſeaſon, it is proper to throw the ground in ridges, ſo level it down when that time arrives. See TRENCHING and RIDGING GROUNDS.

The neceſſary ſpace of ground to plant for private ſervice, is from about five, to fifteen rod, making the calculation according to the extent of the family.

The proper quantity of plants to a rod, excluſive of the alleys, is about 260.

Always chuſe one year old plants, not older, as thoſe of that age will eſtabliſh themſelves ſooner, and more effectually than older roots.

The plants, at the time of planting, conſiſt only of roots; they, at the proper time, are to be taken up from the ſeed-bed with a dung-fork, as entire as poſſible; and ſort out the ſtrongeſt for planting, which are not to be trimmed, only cutting off ſuch parts as are broken or bruiſed.

They are to be planted in rows a foot aſunder, and formed into beds, each bed to conſiſt of four rows, allowing three foot and half alleys betwixt bed and bed, and are to be planted in drills, or ſmall trenches, in the following manner. Begin at one end of the plat of ground, and ſtretch a line croſs-ways eighteen inches from the end; then with the ſpade held in an erect poſition, cut out a narrow trench, cloſe along the outſide of the line, ſix or eight inches deep, making the ſide next the line nearly upright. This done, get the roots, and place them againſt the upright ſide of the trench, ten or twelve inches diſtance, with the crowns two inches below the ſurface, ſpreading the fibres both ways, and draw a little earth up about each plant as you go on, juſt to fix them till the row is planted. One row being thus formed, move the line a foot farther, and caſt out another trench, the earth of which readily covers the plants of the firſt; place the roots as before directed, and ſo on to a third and fourth row, making the earth of each trench cover in the plants of that immediately before it; and when four lines are planted, one bed is formed. Then meaſure off three feet ſix inches for an alley, &c. and proceed to plant another bed of the ſame dimenſions; and after that, leaving another three-foot and half alley, plant a third bed, and in this manner proceed until your plantation is completed.

The beds and alleys may either be lined out now, or deferred till the winter dreſſing, obſerving, that of the three feet ſix inches directed for alleys, two feet only are to be allowed for that uſe, the other foot and half is to be added to the beds, which makes each bed four feet and half wide, i. e. nine inches on each ſide wider than the two outſide rows of plants; but at this time the alleys are only to be trodden out, taking out none of the earth, and ſo ſtand in the alleys and lightly rake the beds ſmooth.

But in making the above plantation, that if you have occaſion to make the moſt of every ſpot of ground, a thin crop of onions may be ſown the firſt year on the ſame plat as ſoon as the Aſparagus is planted; ſo tread in the ſeed, and rake the beds with a light and even hand.

The Aſparagus being planted, their culture is as follow. Their ſhoots will appear above ground the beginning of May not bigger than ſtraws, ſo muſt be permitted to run wholly to ſtalk. During ſummer they muſt be kept clean from weeds, by ſmall-hoeing them three or four times in the courſe of that ſeaſon; and if there is a crop of onions, thin them in the uſual way, cutting up any that grow immediately about the Aſparagus. In October, when the Aſparagus ſtalks decay, cut them down, clear off weeds, and dig the alleys two feet wide, (See *Winter Dreſſing*) burying the weeds therein, and ſpread ſome of the earth over the beds, which is all that is neceſſary

neceſſary to be done until March, at which time the beds ſhould be deeply hoed and raked ſmooth, permitting the ſhoots to run as in the firſt ſummer; and in October, cut down the decayed haulm as before, and land up the beds. In ſpring following, being the ſecond after planting, ſlightly fork-dig the beds, (ſee *Spring Dreſſing*) and rake them level, and in this ſpring the ſhoots will riſe of tolerable ſubſtance, when you may begin the firſt gathering. See *Winter Dreſſing*, *Spring Dreſſing*, *Manuring the Beds*, and *Gathering the Buds*.

*Winter Dreſſing, or Landing up the Beds.*

From about the middle of October, to the latter end of November, is the time to give the Aſparagus beds their Winter Dreſſing.

This dreſſing conſiſts in cutting down the decayed ſtalks of the plants annually at the above time, and clearing the beds from weeds, digging the alleys, and ſpreading ſome of the earth on the top of the beds, which is called landing up the beds.

It is done in the following manner.

The decayed ſtalks or haulm are to be cut down with a knife within an inch or two of the ground, then with a ſharp hoe cut up all weeds, at the ſame time drawing them off into the alleys to be buried. This done, proceed to line out the alleys, ſtretching the line along the edges of the beds about nine inches from each outer row of plants; the ſtumps of the ſtalks will be a guide; then with a ſpade chop the ground along by direction of the line, by which you form each bed four feet and half wide, and the alleys two feet. See the *Method of Planting*. The alleys are then to be dug one ſpade deep, and a good portion of the earth ſpread over each bed three or four inches thick; as you proceed in digging, the weeds drawn off the beds are from time to time to be trimmed into the bottom, and buried a due depth, obſerving to land the beds all a regular thickneſs, ſo as to make them about ſix or eight inches higher than the level of the alleys, forming the edge of each bed full and ſtraight.

The above work of landing the Aſparagus beds muſt be repeated every autumn.

It may by ſome be thought, that by an annual landing of the beds, they in ſeveral years will be conſiderably raiſed; but obſerve, that by the ſpring forking and raking, together with the repeated hoeings and clearing off weeds in ſummer, and at the time of landing up in autumn, a conſiderable part of the earth is annually drawn off again into the alleys.

After performing the winter dreſſing of theſe beds, a row or two of cabbage plants may be planted in each alley, as a place of ſhelter during winter, by which they will be forwarded for early ſpring coleworts; or a row of mazagan dwarf beans may be planted in October or November, in the warmeſt ſide of each alley, for an early crop. The market gardeners alſo often occupy the beds during winter, by planting a crop of cabbage lettuce hereon for ſpring ſervice, which being all gathered or tranſplanted elſewhere by the beginning of April, do not injure the Aſparagus.

*Of the Spring Dreſſing the Beds.*

The Spring Dreſſing of Aſparagus beds conſiſts in fork-digging the beds annually to a moderate depth, to looſen the ſoil, that the buds may freely advance and ſwell to their due ſize.

The time for performing this work is any time in March, but not to defer it later than the firſt or ſecond week in April, becauſe many of the buds will then be formed, and in forward ſeaſons, begin to advance in growth.

This work of looſening the beds is performed with a flat three-tyned fork.

Obſerve, however, that in the firſt ſpring dreſſing after planting, it is proper to looſen the ſurface only with a hoe, two or three inches deep, and ſo rake the beds ſmooth.

But in reſpect to the general ſpring dreſſing, it is to be annually performed by fork-digging, to all ſuch beds that have been planted more than one year, which ſhould be ſlightly dug four or five inches deep with the Aſparagus-fork, being careful to looſen all the earth as deep as the ſurface of the roots, having regard, however, not to wound the crowns of them; and after forking, let all the beds be neatly raked, to break clods, clear off ſtones, and to form a level and ſmooth ſurface, finiſhing each bed with a gentle rounding.

*Of Dunging, or Manuring the Beds.*

Theſe beds ſhould be enriched with an augment of good rotten dung once every two years, the benefit of which will be evident in the quantity, as well as the ſize and quality of the produce.

The time to apply this manure, is at the time of winter dreſſing, or landing up the beds.

The dung for this purpoſe ſhould be perfectly well rotted; none better than the dung of old cucumber and melon beds, or any other

of

of ſimilar quality, which ſhould be applied when the ſtalks and weeds are cleared off, the dung is to be ſpread three inches thick over the ſurface of each bed, and a double portion in the alleys; the beds are then to be ſlightly forked to bury the dung; after this dig the alleys in the uſual way, and ſpread a portion of the earth evenly over the beds.

The winter rains will waſh the enriching quality of the above manure into the beds, and the roots will reap the benefit thereof in ſpring.

*Of Gathering the Produce.*

We formerly obſerved, that Aſparagus, from the time of ſowing the ſeed, till the plants produce buds large enough for uſe, is commonly three or four years; that is, one in the ſeed-bed, and two or three after being tranſplanted; they, however, ſometimes, in very rich ground, yield tolerably large buds the ſecond year, but of which I ſhould adviſe to cut only here and there one of the largeſt that happen to appear the firſt week or fortnight; afterwards permit the whole to run to ſtalk; but in the third year you may perform a more general gathering, and continue it a month or five weeks; and in the fourth year, the general produce will riſe in its utmoſt perfection: you may then, and every ſucceeding year, gather all the buds ariſing from every plant during the ſeaſon of Aſparagus.

The proper ſize of the buds for uſe is, when they are from about one to four or five inches high above the ſurface of the earth, while the heads remain compact and plump.

The principal ſeaſon of cutting them, is from the latter end of April, or beginning of May, according to the forwardneſs of the ſeaſon, until the middle or latter end of June.

They might, however, be obtained a month or two longer in the ſeaſon, by continuing to cut all the buds according as they attain proper ſize; but this would be a very wrong practice, as the roots would thereby continue ſending up a freſh ſupply, till they in a manner exhauſted their vegetable fund, as would be apparent by the inconſiderableneſs of the future year's crop, and ſhort duration of the plants.

The gatherings therefore ſhould be terminated about, or ſoon after the 20th of June, eſpecially, as by that time there will be plenty of young peas, to ſubſtitute as a diſh at table in lieu of the Aſparagus.

If late Aſparagus is however wanted, ſome beds ſhould be ſet apart for that purpoſe, excluſive of the main crops.

For the purpoſe of cuttting the Aſparagus for uſe, it is neceſſary to be furniſhed with a long ſtrait narrow-pointed kniſe, the blade ſix or eight inches long, teethed on the edge like a ſaw; and in cutting the Aſparagus, ſlip the kniſe down cloſe to each ſeperate bud, and cut them off ſlanting three or four inches within the ground, being careful not to injure any of the younger buds riſing in ſucceſſion, there being generally ſeveral from the ſame root, advancing in different ſtages of growth.

The gardeners who ſupply the London markets with Aſparagus, ſort it into three ſizes, a large, middling, and ſmall ſort; the former they call ware, the next middlings, and the latter ſprew; they ſell it wholeſale by the baſket, three, four, or five hundred buds in each, according to their ſize, and thoſe that retail it, bind it in bundles, from one to three hundred in each bundle.

In preparing Aſparagus for the table, the cook ſhould ſlightly ſcrape each ſhoot, to diveſt them of the ſmall ſcaly parts annexed to their ſides, tye them in ſmall bunches, the heads all one way, then cut the white ends even; they are then ready for boiling, which is effected in fifteen minutes.

*Forcing or raiſing early Aſparagus.*

As many families are anxious to have Aſparagus in winter, and early in ſpring, I ſhall next proceed to the method for obtaining it alſo in theſe ſeaſons.

This is effected by means of planting the roots in ſubſtantial hot beds, covered with frames and glaſſes, as hereafter directed.

This work is by gardeners called forcing Aſparagus.

As the practical method of forcing Aſparagus has not been digeſted by former authors on gardening, I propoſe to handle this article at ſome length, according to real practice, for the benefit of my brother-gardeners, who have not had the opportunity of ſeeing the true practical part; and as the London kitchen-gardeners, having great experience, by forcing vaſt quantities annually, it is generally allowed they excel in the production of winter Aſparagus, I ſhall exhibit the whole culture according to their method.

Previous to this work it muſt be obſerved, that when intended to have a conſtant ſucceſſion of Aſparagus during winter and ſpring, a new hot-bed muſt be made, and planted with freſh plants every three or four weeks, for theſe roots, when forced in hot-beds, do not continue to yield any tolerable produce longer

longer than that period of time, when they will in a manner be quite exhauſted, and are not fit for that nor any other purpoſe afterwards: therefore, for this purpoſe of forcing, a freſh quantity of plants muſt be in readineſs for every new hot bed: theſe are raiſed in the natural ground to a proper age; they muſt be three or four years old; that is, the plants are raiſed from ſeed, as directed for the natural-ground Aſparagus, and when they are one year old, tranſplant them in beds of rich earth, as directed alſo for the natural plantation, in rows a foot aſunder, but need not be more than nine inches diſtance in each row, forming them in beds of ſix rows in each, with only two feet alleys, juſt to go in to clean off weeds, &c. for the beds need not be landed up in winter, as in the natural Aſparagus; and when the plants have had two ſummers growth, they, in good ground, will be fit for forcing, though they will be in greater perfection, if permitted to ſtand three years. During the time they remain in the natural ground, no buds ſhould be gathered, at leaſt very few, but permit the whole to run to ſtalk each ſummer.

It muſt next be obſerved, that when intended to force Aſparagus annually, ſome ſeed muſt be ſown every ſpring, and a due quantity of plants tranſplanted as before directed, ſo as to have three different pieces of ground always employed at the ſame time with Aſparagus plants for the above purpoſe; that is, one piece with ſeedlings in the ſeed-bed, the other two with tranſplanted plants, one to be a year's growth before the other; by which practice, after the three firſt years, you will obtain an annual ſucceſſion of plants fit for a forcing.

But as ſome perſons may be impatient to wait the raiſing the plants, or may be anxious to have a ſupply till their own are ready, in which caſes, they may be furniſhed with them at moſt of the kitchen-gardeners in the neighbourhood of great towns, particularly that of London, where they commonly ſell them by meaſurement of the ground they grow upon, generally from ſix to ten ſhillings per rod, according to the age, ſize of the plants, and fullneſs of the crop.

The neceſſary quantity of plants for hot-beds is conſiderable, ſince about as many as grow upon three rods of ground is requiſite for a bed intended for a common three-light garden-frame. The common allowance of the London gardeners is about one rod to a light; for the plants are to be placed as cloſe as they can poſſibly ſtand to one another, to the amount of five, ſix, or ſeven hundred, or more, according to their ſize, in a three-light box, otherwiſe a bed would not afford a ſufficient ſupply, adequate to the expence and trouble neceſſary in the culture of theſe plants in hot-beds; for, from a bed of the above dimenſions, we commonly expect about three hundred large buds, or ware, beſides ſprew, weekly, and in the whole about eight or nine hundred good Aſparagus, and near as many ſmall ones in three weeks, in which period of time the roots will have exhauſted their ſtrength, and can produce very little more.

Therefore, in raiſing or procuring plants for the above purpoſe, the quantity muſt be proportioned to the number of lights you intend working, and the ſucceſſion of Aſparagus required, which may be readily calculated according to the foregoing obſervations.

The ſeaſon to begin the above work of forcing, is according to the time the Aſparagus is required for uſe; as, for inſtance, if you would have Aſparagus at Chriſtmas, it is proper to make the hot-bed in the firſt or ſecond week in November, and ſo on in proportion to any other time of the winter or ſpring it is deſired to have Aſparagus fit to gather. The rule is this: if a conſtant ſucceſſion is required from about Chriſtmas till the time of the natural Aſparagus come in, a new hot-bed ſhould be made every three weeks or a month, as already obſerved, from the beginning of November until that of March; but ſome of the London gardeners begin about the latter end of September, in order to obtain Aſparagus againſt Lord Mayor's day, which happens the ſecond week in November.

Previous to making and planting the hot-bed, obſerve alſo the following particulars.

As to the hot-beds for this purpoſe, the proper materials are, a ſufficient quantity of horſe or ſtable dung, freſh, and full of heat, wherewith to make the hot-bed for one or more three-light frames, two feet and half, or a yard high; alſo ſome to lime it when the heat declines, a quantity of good kitchen-garden earth, and one or more three-light garden-frames to place over the bed, and ſome large garden-mats, to cover occaſionally on nights and bad weather.

The dung for making theſe beds is to be previouſly prepared, as directed under the article HOT-BEDS.

The ſituation for the hot-beds ſhould be where the ground is light, rich, and dry, for

the convenience of having plenty of good light earth at hand for earthing the bed, banking up the outſide plants, and moulding them at top, &c.

The expoſure ſhould be open to the full ſun, and defended from the northerly winds.

It is elegible to make the bed in a trench four or five feet wide and one deep, ſo that the earth dug out in forming the cavity, ſerves in part to earth the bed and plants as above.

As to the general dimenſions of the bed; it is made a foot wider and longer than the frames intended to cover it, that is, ſix inches on each ſide and end, whereon to bank up earth againſt the outſide roots, &c. and muſt be two feet and half, or a yard high, earthed at top ſix inches thick for the reception of the plants, which are placed entirely upon the top of the earth before the frame is put on, keeping them within the compaſs thereof, upright, and as cloſe as they can ſtand, as hereafter directed; and as there being a clear ſpace of ſix inches on each outſide and end, as above hinted, is to receive a wall or bank of earth againſt the outſide roots, and for the ſupport of the frame, the latter of which, on account of the firſt violent heat, is not put on till two or three weeks after planting the roots; theſe, as ſoon as planted and banked up on the outſides, are earthed an inch deep, which is encreaſed to five or ſix, when the buds appear through the firſt earthing, at which time, as the heat of the bed will be moderate, the frame and glaſſes are placed thereon. See the *General Culture*.

*Method of making the Bed, planting the Roots, and Culture.*

In the ſituation and expoſure above deſcribed, mark out a trench for the hot-bed, twelve or fourteen inches wider than the intended frames, and of a proportionable length, whether for one, two, or more, and dig out the cavity one ſpade deep, then wheel in the dung, and with which form the bed the full width and length of the trench, obſerving, if only for a ſingle three-light frame, make the bed a yard high, but if for two or more ſuch frames in one range, two feet and half depth of dung is ſufficient, working the whole upright and firm in the uſual way. See HOT-BEDS.

When the bed is thus formed, let it be directly earthed at top for the reception of the plants, with finely broken earth ſix inches thick, to the full width and length of the bed, and rake the ſurface level and ſmooth; this done, immediately proceed to place the roots, for no time muſt be loſt in Aſparagus hot-beds in waiting for the temperature of the heat. Previous to planting the roots, mark out on the ſurface of the bed the exact width and length of the frames, ſo as to have a clear ſpace on each outſide of ſix inches width, to receive the banking of earth againſt the outſide roots, &c. as before-mentioned; then begin at one end, and raiſe a ſmall ridge of earth croſsways upon the ſurface, about ſix inches high, againſt which to lay the firſt row of roots; then having the roots, which are not to be trimmed, lay the firſt courſe cloſe againſt the above ridge, and intirely upon the ſurface of the bed, with the crowns upright, and as cloſe to one another as you can poſſibly place them, and when one courſe or row is thus placed, lay another againſt theſe in the ſame manner, and ſo proceed, laying them one againſt another as cloſe together every way as you can poſſibly crowd them from one end of the bed to the other, without laying any earth between or about the fibres, for theſe will ſoon ſtrike down into the earth of the bed, being careful to place all the crowns of ſuch an equal height, that the whole may form, as it were, a level ſurface, keeping the whole rather within the meaſure of the frame, for they will unavoidably ſwell out a little on each ſide, obſerving, if more frames than one are intended for the ſame bed, then at the termination of the length of each frame, raiſe a croſs ridge of earth, as at firſt, about ſix inches in height; ſo proceed laying the plants, as before, and when all the roots are thus placed the whole length of the bed, directly bank up ſome earth on each ſide and end, as above hinted, againſt the outſide roots, raiſing it an inch higher than the crowns of them, then cover the crowns all over evenly with finely-broken light earth an inch deep, which finiſhes the work for the preſent until the buds appear, which ſee, for the roots muſt not till then be earthed deeper, nor the frame placed upon the bed, till the violent heat has ſubſided, becauſe it would confine the burning ſteam, and occaſion the bed to heat too vehemently, to the deſtruction of the plants.

In making the above beds, many of the London gardeners, to ſave dung, inſtead of making the beds a foot wider than the frames, as above directed, make them only the exact width of the frame; ſo to ſecure the outſide roots, and for the ſupport of the frame, raiſe a bank of earth quite from the ground,

ground, ſix inches broad, drawing it in gradually to the top, banking it cloſe againſt the ſides of the bed, and that of the outſide roots, raiſing it an inch higher than the crowns of them, ſo earthing them all over the top an inch deep, as before obſerved; which method of banking quite from the ground, is very effectual in preſerving the temperature of the bed, by defending the dung from driving rains, ſnow, and piercing winds.

As ſoon as the beds are made and planted in either of the above methods, then, in order to judge of the temperature of the heat, it is proper to thruſt ſome ſharp-pointed ſticks, two feet long, down betwixt the roots into the dung of the bed, and by drawing theſe up daily, and feeling the lower end, you will be able to judge of the degree of heat, whether too violent or weak, which is to be regulated accordingly, as hereafter directed.

The beds being made and planted, the roots will ſoon after ſend forth freſh fibres into the earth, and even, in time, into the very dung, and the buds of the Aſparagus will begin to appear in about three weeks; but till that period, as the heat will be very ſtrong, the bed is to remain unframed and uncovered, except being occaſionally defended at top with long litter or garden mats, from violent rains, ſnow, and ſevere froſty weather, obſerving, however, that until the buds appear, moderate rains, froſts, &c. can do no damage; therefore uſe only ſlight and occaſional covering, as above, juſt to preſerve the crowns of the plants until the heat of the bed is become quite moderate, for at this period too much covering would encreaſe the heat to a violent degree, and ſcorch the roots, which in ſtrong beds we muſt, at any rate, be particularly watchful to guard againſt; the temperature of heat muſt therefore be every day examined by the trying ſticks, and if it is found ſo vehement, that you judge the roots are in danger of ſcorching, the remedy is, to bore with a large rake-handle, &c. the ſides of the bed, quite through in ſeveral places, both in the dung, and betwixt the top of the dung and the earth, that the rank ſteam and burning quality may evaporate at the holes; at the ſame time the free air will have acceſs, and in two or three days the bed will be reduced to a moderate temperature.

When the Aſparagus begins to appear, they are then to have their final earthing of four or five inches depth of more mould all over the crowns of the roots, and the frame and glaſſes to be put on. Obſerve as follow.

At this period, i. e. that of the firſt appearance of the buds, prepare ſome light, rich, finely-broken earth, ſufficient to mould them the above depth; at the ſame time, in order to ſecure the outſides of the ſaid final earthing, it is proper to form a ſort of border, or empalement, round the top of the edges of the bed, four or five inches high, which is done either with a thick ſtraw-band, or by raiſing the outſide banking an additional four or five inches, either of which, as juſt obſerved, is neceſſary not only to ſecure the ſides and ends of the earth, but alſo to ſupport the frame a due height, the bottom of which ſhould ſtand nearly as high as the ſurface of the final covering of earth, ſo as there may be full ſcope between the earth and the glaſſes for the buds to ſhoot. But in reſpect to the above empalement round the top of the bed, that inſtead of forming it by banking higher with earth, it is more cuſtomary to fix a wreath of ſtraw-bands round the top of the firſt banking, to ſerve that purpoſe; this the London gardeners call wreathing the bed. It is done thus: when the buds firſt appear, make a large ſtraw-band or rope, four or five inches thick, and long enough to go round the bed; then upon the top of the banking, exactly in the place where the frame is to ſtand, place this band round ſingly in a neat and regular manner, faſtening it with pegs ſtuck through the ſides of it into the earth, and when this is fixed, directly earth the buds as high as the ſaid wreath, or about four or five inches deep, as above noticed, ſo as there may be now in the whole, about five or ſix inches depth of earth all over the crowns of the plants; then if the heat of the bed is become of a moderate temperature, it is proper to put on the frame, reſting it upon the top of the above wreath or ſtraw-band; or in default of this, ſet it immediately on the top of the banking, having been previouſly raiſed as above; after this, if you are anxious to have long buds, as is the caſe with the market gardeners, you may lay an inch depth of more earth, ſo as to make the whole full ſix inches thick.

The bed being now finally earthed and framed, and the heat is become moderate, the glaſſes or lights are to be kept conſtantly upon the frame, which on nights ſhou'd be covered with mats, or dry long litter, but muſt be uncovered every day, except in uncommonly ſevere weather, for it is of importance to admit as much light and ſun as poſſible, to promote a green colour in the tops of the buds;

and as to the admiſſion of freſh air, if the heat is moderate, the glaſſes need only be ſhoved a little open in fine days, eſpecially if you require the plants to be drawn up quick; but by admitting a larger portion of air, the buds riſe ſlower, and will acquire a larger ſize and greener colour, on which conſideration ſome, in the ſpring-made beds, take the glaſſes entirely off a few hours in fine mild dry days, particularly when the heat is conſiderable at the firſt appearance of the buds after the bed is framed.

At this time alſo, examine the temperature of heat in the bed. When it has been made about three weeks, if it is but a ſmall bed, only for one or two three-light frames, the heat will begin to decline conſiderably, which ſhould be renewed by a lining of hot dung applied to the ſides: do not omit this, particularly when the buds begin to appear through the laſt covering of earth, if you ſhould ſee occaſion, though beds of more conſiderable length ſeldom require lining till after the firſt breaking or gathering of the buds; then adding a good lining, it will maintain the bed in due temperature fifteen or eighteen days longer, which is as long as the roots continue yielding any tolerable produce. See LINING BEDS.

In about five or ſix weeks after the bed is made and planted, we may expect Aſparagus fit to gather; when the buds are from two to four or five inches high above the earth, they are of the proper ſize.

The method of gathering them in hot-beds is, by breaking the buds off near the root, and is done by thruſting the finger and thumb into the earth, and by a gentle twiſt the buds will readily break. For the ſupply of a family, the buds may be gathered every other day, or oftener, if neceſſary; but for market, the gardeners ſeldom make more than three principal gatherings, or breakings, from the ſame bed, that is, one every week for three weeks, and the ſecond breaking is generally the beſt, which in Covent-garden market is ſold from ten to thirty ſhillings a baſket, each baſket conſiſting of about 300 buds, and which of thoſe they call ware, are often very large and fine for the ſeaſon. But the Rev. Mr. Hanbury, in his Body of Gardening, ſays, the forced Aſparagus brought to Covent-garden market, is ſcarcely bigger than wheat-ſtraws, which he attributes to the ignorance of the gardeners, in which, however, as well as in the true culture of forcing Aſparagus, that gentleman is greatly miſtaken; for the London gardeners having conſiderable practice in that article, many of whom force upwards of a hundred lights annually, that they generally excel moſt others in the culture of forced Aſparagus, and ſupply the markets therewith in great perfection, eſpecially from about Chriſtmas till the arrival of the natural crops. Indeed, in the beſt-managed beds, there will, beſides the main crop of large buds or ware, be many of middling growth, and many ſmall buds or ſprew; ſo the gardeners ſort them accordingly for market, into ware, middlings, and ſprew, the latter of which is ſometimes not much thicker than large ſtraws.

*Of the* ASPARAGUS FRUTICOSA, *or* Shrubby Aſparagus, *including alſo the Dragon-tree, one of the Palms, but now ranged by Linnæus as a ſpecies of Aſparagus.*

Beſides the eſculent ſpecies of Aſparagus already treated of, there are ſeveral other ſpecies in the ſame genus, moſtly of ſhrubby growth, exotics of the green-houſe and ſtove.

The ſpecies of moſt eſteem are,

[1]ASPARAGUS *Albus.*

*White Prickly Portugal Aſparagus.*] Aſparagus, with ſhrubby very white ſtalks, and flexible branches, growing four feet high, ornamented with ſhort, fine, chaffy, deciduous leaves, in cluſters from one point, and ſharp ſpines under each tuft of leaves.

[2]ASPARAGUS *Declinatus.*

*Declinated Briſtly-leaved African Aſparagus.*] Aſparagus, with ſeveral ſhrubby, erect, ſmooth ſtalks; infirm declinated branches, cloſely covered with briſtly evergreen leaves.

[3]ASPARAGUS *Acutifolius.*

*Acute-leaved Portugal Aſparagus*] Aſparagus, with ſhrubby, crooked, ſmooth, whitiſh ſtalks, growing about four feet high; ſmall, rigid, prickly-pointed, evergreen leaves, in cluſters from the ſame point.

[4]ASPARAGUS *Retrofractus.*

*Retrofracted Great Prickly Larch-leaved Aſparagus.*] Aſparagus, with ſhrubby very crooked ſtalks, riſing eight or nine feet high, emitting infirm reflexed branches, adorned with long, fine, narrow, evergreen leaves, in cluſters from one point, and a ſingle ſharp thorn advancing under each tuft of leaves.

Theſe four ſpecies flower here annually, which, like the common Aſparagus, are very inconſiderable, and are ſeldom ſucceeded by ſeeds in England.

*Their Culture, &c.*

The above four ſpecies are exotics of the green-houſe, ſo muſt always be kept in pots, and managed

managed as the other plants of that department. See GREEN-HOUSE PLANTS.

Their propagation may be readily effected by ſlipping the roots in March or April.

If ſeed can be procured, they may alſo be raiſed abundantly that way, by ſowing it in pots in March or April, and plunge them in a hot-bed, juſt to bring up the plants, which in Auguſt will be large enough for tranſplanting into ſeparate pots.

[5]ASPARAGUS *Draco.*

*The Draco Arbor, or Dragon-tree, from the Cape Verd Iſlands.*] Aſparagus, with a large ſingle or unbranching trunk, riſing twelve or fourteen feet high, the top crowned with a circular cluſter of ſword ſhaped, pointed leaves, a yard or more in length, placed ſingly, without foot-ſtalks round the ſtem, and hang down on every ſide in a ſingular manner, but rarely flowers in England.

From this plant flows, by inciſion, a red gummy juice, of medical property, commonly called Dragon's Blood.

This ſpecies is an exotic of the hot-houſe, and retained in many of our gardens, as a plant of ſingular growth and appearance, bearing reſemblance in growth and leaves to the *Yucca*, or Adam's Needle.

It is of the Palm kind, moſt of which are of ſingular growth. See PALMÆ, &c.

The propagation of this plant is by ſeed, which is procured from abroad, ſown in pots, and plunged in bark hot-beds; by which aſſiſtance the plants will ſoon come up, giving occaſional waterings, and when three inches high, tranſplant them into ſeparate pots, continuing them always in the ſtove, except in the months of July and Auguſt, when they may be expoſed in the open air.

During ſummer they muſt be frequently watered, which muſt alſo be performed in winter with moderation.

ASPERIFOLIÆ Plantæ, Rough leaved Plants, and in antient botany the name of a claſs, conſiſting of plants whoſe leaves are rough to the touch, and have four naked ſeeds; of which are *Anchuſa*, or Bugloſs; *Borrago* Borage; *Cynogloſſum*, Hound's-tongue; *Symphytum*, Comfrey, &c. the leaves of all of which are ſimple, alternate, and attached to the ſtems and branches, without any foot-ſtalk.

ASPHODELUS, Aſphodel, or King's-Spear, ſo called from the reſemblance of its ſpiked flowery ſtalk to a royal ſcepter.

The plants of this genus are herbaceous flowery perennials, with fleſhy fibrous roots, producing annual ſtalks two or three feet high terminated by long ſpikes of many liliaceous flowers of ornamental appearance.

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX, none. COROLLA conſiſts of one petal, cut into ſix ſpear-ſhaped ſpreading ſegments, and at bottom a globular nectarium of ſix valves. STAMINA, ſix ſubulate arched filaments, alternately long and ſhort, attached to the valves of the nectarium, and oblong incumbent antheræ. PISTILLUM, a globular germen within the nectarium, awl-ſhaped ſtyle, and truncated ſtigma. PERICARPIUM, a globular fleſhy capſule of three cells, filled with triangular ſeeds.

There are but three diſtinct ſpecies, all of which have fleſhy fibrous roots.

The ſpecies are,

[1]ASPHODELUS *Luteus.*

*Common Yellow Aſphodel.*] Aſphodelus with an upright, unbranching, large, round, leafy ſtalk, growing near three feet high, adorned half-way with numerous long, triangular, hollow, ſharp-pointed leaves, and many ſtarry yellow flowers, forming a long erect ſpike from the middle of the ſtalk upward.

[2]ASPHODELUS *Alba Ramoſus.*

*Branching Great White Aſphodel.*] Aſphodelus with branching unleaved ſtalks a yard high; ſword-ſhaped, long, hollow, flexible leaves, in large tufts directly from the root, and in the midſt of them the ſtalk, emitting many ſide branches, adorned upward with long ſpikes of many large, ſtarry, white flowers, having a purple line running down each ſegment.

[3]*Variety.*] ASPHODELUS *Alba non Ramoſus.*

*Unbranching White Aſphodel.*] Aſphodelus, with ſimple or unbranching leafleſs ſtalks a yard high; ſword-ſhaped, very narrow, flexible leaves from the root, and amongſt them iſſue the ſtalk, upright, without branches and leaves, terminated by a very long ſpike of many ſtarry ſnow-white flowers.

[4]ASPHODELUS *Fiſtuloſus.*

*Fiſtular*, or *Hollow-leaved Minor White Aſphodel*] Aſphodelus with upright, branching, leafleſs ſtalks, eighteen inches high; awl-ſhaped, ſtriated, fiſtular leaves, hollow like a pipe, riſing in a large tuft from the root, in the midſt of which iſſue the ſtalks, dividing upward into a few branches, adorned at top with ſtarry white flowers ſtriped with purple.

*Variety.*] Fiſtular-leaved Annual White Aſphodel.

The roots of all theſe Aſphodels conſiſt of many thick fleſhy fibres, connected at top into one common head; to thoſe of the ſecond and third,

third, hang many oblong thick tubers, all of which roots are of perennial growth.

The leaves and ſtalks riſe annually from the roots in ſpring, and periſh in autumn, after they have flowered and perfected ſeeds.

The flowers are numerous on each ſtalk, ſurrounding them from the middle upward, forming a ſpike of innumerable buds, opening in ſucceſſive order; each ſeparate flower conſiſts of one leaf, or petal, deeply cut into ſix ſegments, ſo as to appear ſo many different petals, opening in June, continuing in ſucceſſive order a month or ſix weeks, and are ſucceeded by plenty of ripe ſeeds in autumn.

*Culture, Propagation, &c.*

All theſe three ſpecies demand attention as plants of ornament, as during their bloom they make a noble appearance, and may be employed as choice furniture for the embelliſhment of the principal compartments of the pleaſure ground.

They ſucceed in any common ſoil and ſituation, and are of eaſy culture.

Their propagation is eaſily accompliſhed by ſeed, and by parting their roots. Sow the ſeed in autumn or ſpring in a bed of light earth, and in April or May the plants will appear, which in autumn or ſpring after tranſplant into nurſery-beds, ſix inches diſtance, where they will flower the following ſummer, and in autumn after remove them to the open borders.

By dividing, or ſlipping the roots, they may be encreaſed plentifully, which may be performed in autumn or ſpring. Plant the ſlips directly where they are to remain, and they will all flower the following ſummer.

ASTER, Starwort, ſo called from the figure of its radiated flower.

The Aſters are moſtly herbaceous, fibrous-rooted, flowery plants; ſome are annual, but the greater part are hardy perennials, producing annual ſtalks of different ſtatures, from one to five feet in height, the whole adorned with ſimple leaves, and terminated at top by compound radiated flowers. See RADIUS. There are alſo ſome ſhrubby plants of the green-houſe.

Claſs and order, *Syngeneſia Polygamia Superflua.*

*Characters.*] CALIX, a ſcaly, imbricated, general cup, containing numerous florets. COROLLA is compound and radiated, many funnel-ſhaped hermaphrodite florets form the diſk, and flat female florets, three-parted at the end compoſe the border, or radius. STAMINA, five filaments, and cylindric antheræ. PISTILLUM, an oblong germen, ſlender ſtyle, and bifid ſtigma; and in the female florets, the ſtyle is crowned by two ſtigma, which are oblong and revolute. PERICARPIUM, none, and a ſingle downy ſeed ſucceeds each floret.

There are upwards of thirty ſpecies, ſeveral of which produce large and elegant flowers; and thoſe of an annual ſpecies, called *China After*, are remarkably grand and beautiful; ſome of the perennials are alſo very ſpacious and ſhowey, all of which adorn our gardens in autumn.

Firſt of the annual ſort, which is,

1 ASTER *Chinenſis.*

*The China After, or Annual Starwort, from China, or Queen Marguerette.*] After with only one ſtalk from the root, dividing into many ſpreading branches, growing about two feet high, ornamented with oval, angular, indented foot-ſtalked leaves, and every branch crowned by one large beautiful radiated flower, appearing in Auguſt, September, and October.

*Varieties of this are.*] China After, with ſingle white flowers—ſingle blue flowers—ſingle purple flowers—ſingle red flowers,—with double white flowers—double blue flowers—double purple flowers—double red flowers,—and with variegated blue-and-white flowers; all of which varieties, in their ſingle ſtate, conſiſt of a broad yellow diſk, encompaſſed by a ſeries of flat ſpreading florets, forming the circumference, or radius; but the double flowers have many ſeries of ſuch florets continued to the very centre.

All the varieties are but of one ſummer's duration, riſing from ſeed in ſpring, flower and perfect ſeed plentifully in autumn, and periſh root and branch in November; ſo a freſh ſupply muſt be raiſed annually.

*Their Culture.*

This ſpecies *After Chinenſis* is one of the moſt elegant and ſhowey annuals that ornament our gardens, all the varieties of which are curious furniture for the embelliſhment of the common borders; and as they are of eaſy culture, may be obtained plentifully in every garden.

Their propagation is by ſeed ſown annually in March, April, or beginning of May, in a hot-bed, or warm border, from which the plants are to be tranſplanted into the borders.

Be careful to procure ſeed of the different varieties, as white, blue, red, &c.

The

The ſeed is commonly ſown in a moderate hot-bed; it will, however, grow freely in a warm border, if ſown about the middle, or latter end of April, or beginning of May, but by the aid of a hot-bed, juſt to raiſe the plants, it will forward them ſooner, by almoſt a month, to a ſtate of flowering. Sow the ſeed either on the ſurface, or in ſmall drills drawn with the fingers, and cover it a quarter of an inch deep with fine earth, and when the plants appear, inure them betimes to the open air, previous to their being tranſplanted, and give frequent waterings. See ANNUAL PLANTS.

In May or June, when the plants are three inches high, tranſplant them into the natural ground in the places where they are to remain to flower, taking opportunity of ſhowery weather, and let them be properly diſpoſed in every border, and other compartments contiguous to the principal walks, lawns, &c. a yard, at leaſt, diſtance from one another, where they will make a grand ſhow in Auguſt, September, and October, eſpecially if there are varieties of different colours.

For ſome other particulars in their culture, ſee ANNUAL PLANTS.

If any are wanted for pots to adorn court-yards, &c. ſome of the fineſt double ſorts of different colours ſhould be ſelected as ſoon as they ſhew bloom; ſo take them up with large balls about their roots, and plant one in each pot, giving water plentifully.

To ſave ſeed of this ſpecies, it ſhould be gathered only from the perfect double flowers of the moſt lively colours, which will be ripe the end of September and October, taking opportunity of dry days, to cut off the heads as they ripen.

The hardy perennial ſorts are,

[1]ASTER *Tradeſcanti.*

*Tradeſcant's Virginia Starwort, erroneouſly called Michaelmas Daiſy.*] After with numerous, erect, branching ſtalks, about four feet high, adorned with oblong acute-pointed leaves, broad at the baſe, which half embrace the ſtalk, and all the ſtalks and branches terminated by pale blueiſh flowers, appearing in October.

[2]ASTER *Amellus.*

*Amellus, or Italian Starwort.*] After with numerous, upright, firm ſtalks two feet high, ornamented below with ſpear-ſhaped, blunt, three-veined, rough entire leaves, and the tops crowned by corymbus cluſters of large flowers, on naked foot-ſtalks, having a golden centre, and bright blue radius, appearing in October and November.

[3]ASTER *Alpinus.*

*Alpine Dwarf Starwort.*] After, with upright unbranching ſtalks about a foot high, garniſhed with ſpear-ſhaped hairy leaves, the radical ones blunt, and each ſtalk ſurmounted by one large blue flower, appearing in June and July.

[4]ASTER *Novæ Angliæ.*

*New-England Starwort.*] After with many erect hairy ſtalks about five feet high, decorated with ſpear-ſhaped entire leaves, growing alternate; their baſe half ſurround the ſtalk, and all the ſtalks terminated by panicles of large violet-purple flowers, appearing in Auguſt and September.

[5]ASTER *Altiſſimus.*

*Talleſt Philadelphia Purple Aſter.*] After with upright, unbranched, hairy ſtalks eight or ten feet high; oblong pointed hairy leaves; their baſe half embrace the ſtalks, and each ſtalk terminated generally by three large reddiſh-purple flowers, appearing in November.

[6]ASTER *Grandiflorus.*

*Great Blue Pyramidal Aſter, or Cateſby's Virginia Starwort.*] After with ſtalks a yard high, emitting many ſide-branches, adorned with ſpear-ſhaped, reflexed, rough leaves, and every branch crowned by one large blue flower, having a rough calix, appearing in the end of October and November.

[7]ASTER *Puniceus.*

*Purple-ſtalked American Aſter.*] After with upright purple ſtalks three feet high, garniſhed with ſpear-ſhaped, ſawed, rough leaves; their baſe half embrace the ſtalk, and each ſtalk terminated by a corymbus cluſter of pale blue flowers, growing ſingly on alternate foot-ſtalks, appearing the end of September and October.

[8]ASTER *Linifolius.*

*Flax-leaved Aſter.*] After with ſtrong erect ſtalks about a yard high, ſending forth many ſide-branches, forming a corymbus, narrow, acute-pointed, entire, alternate leaves; their baſe half embrace the ſtalk, and every branch terminated by one blue flower, appearing in Auguſt and September.

[9]ASTER *Undulatus.*

*Waved-leaved Aſter.*] After with branching ſtalks about a yard high, heart-ſhaped waved leaves, downy underneath; their baſe embrace the ſtalks, and each branch terminated by an aſcending ſpike of whitiſh-blue flowers, appearing in September.

[10]ASTER *Ericoides.*

*Heath-like Buſhy Starwort.*] After with ſlender very branchy buſhy ſtalks about three feet high,

high, closely garnished with very narrow entire leaves, and each branch terminated by a small whitish flower, having leafy foot-stalks, appearing in October.

[11]ASTER *Cordifolia.*

*Cordated Broad-leaved After.*] After with slender stalks about two feet high; heart-shaped, pointed, sharply serrated, foot stalked leaves, and the upper parts of the stalk dividing into many branches, terminated by pannicles of white flowers; in September.

[12]ASTER *Glaber.*

*Smooth Peach-leaved After.*] After with branching stalks about five feet high; oblong, spear-shaped, acute, serrated, smooth leaves, and all the branches dividing at top into several spreading foot-stalks, each ending in a large pale blue flower, appearing in October.

[13]ASTER *Rigidus.*

*Stiff-leaved White Virginia After.*] After with branchy stalks about three feet high, very narrow alternate leaves, and each stalk and branch terminated by one white flower, appearing in November.

[14]ASTER *Tenuifolius.*

*Narrow Belvedere-leaved American After.*] After with branching stalks four or five feet high, very narrow entire leaves, and all the branches ending in long spikes of whitish-blue flowers, appearing the end of October.

[15]ASTER *Concolor.*

*Single-stalked Virginia Starwort.*] After with single or unbranched stalks four feet high; oblong, oval, entire, downy, close-sitting leaves, and each stalk terminated by a loose spike of blueish flowers, appearing about Michaelmas.

[16]ASTER *Divaricatus.*

*Divaricated White American After.*] After with stalks about two feet high, divided at top into forked diverging branches, garnished with oval sawed leaves, and terminated by umbellated clusters of white flowers, appearing the beginning of September.

[17]ASTER, *Novæ Belgicus.*

*New Holland Starwort.*] After with stalks about four feet high; spear-shaped, slightly-sawed, close-sitting leaves; all the stalks paniculated, and all the branches of each panicle terminated by one blue flower, appearing the end of August.

[18]ASTER *Tripolium.*

*The Tripolium After, or Sea Starwort.*] After with stalks two feet high, producing unequal branches; spear-shaped, entire, fleshy, smooth leaves, and terminated by a corymbus cluster of blue flowers; in July and August.

Of the above species, the first four or five sorts are those most commonly cultivated.

All these perennial Asters have fibrous very spreading perennial roots, but annual stalks, which rising annually in spring, continue their growth all summer, flower and perfect seed in autumn, and then die down to the root.

*Their Culture.*

They disdain no common soil of a garden, and will succeed almost any where.

Most of them produce considerable tufts of stalks, forming a large bush, which being closely covered with leaves and flowers, they make a very showey appearance late in autumn, when other flowers are scarce, so are well calculated for large open compartments, or in assemblage with common shrubs, and to adorn the boundaries of home-lawns, or the borders of walks carried round out-shrubberies, &c.

The propagation of all the sorts is effected with facility, by dividing their roots in autumn, winter, or spring.

The root you intend to encrease from may either be taken up and divided, or with a spade separate part of it as it stands, and so divide that part into as many separate slips as it will admit of.

The smallest slip will readily grow and flower the following autumn, and in a year or two will encrease to a great bunch; and some sorts spread so considerably, that it is necessary to reduce them every two or three years, either by cutting in the roots on each side, or by taking them entirely up, and divide them, so plant a necessary supply of the best slips, and throw the rest away.

Most of the sorts may also be encreased by cuttings of their flower-stalks in May and June in a shady border, so that if any sort afford root off-sets sparingly, recourse may be had to this method.

The green-house sort is,

ASTER *Fruticosus.*

*Shrubby African Starwort, from the Cape of Good Hope.*] After, with a shrubby stem, growing a yard high, sending out side-branches, adorned with narrow leaves, in clusters from one point, and long naked foot-stalks from the sides of the branches, each supporting one blue flower, appearing early in March.

*Variety.*] Shrubby After with white flowers.

Both these varieties must always be kept in pots, in order to be wintered in a green-house.

Their

Their propagation is by cuttings of the young branches in ſpring or ſummer, planting them in pots, which plunge in a hot-bed, juſt to ſtrike the cuttings; afterwards move them to the full air during ſummer.

ASTRAGALUS, Milk-Vetch, including alſo the *Tragacantha*, or Goat's Thorn.

This genus conſiſts of herbaceous annual and perennial flower-plants, and ſome of ſhrubby growth, all of them adorned with winged leaves, and papilionaceous or butterfly-ſhaped flowers.

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX is monophyllous, and five-parted at top. COROLLA is papilionaceous; the ſtandard long, erect, blunt, and reflexed on the ſides; the wings and keel of equal length, and ſhorter than the ſtandard. STAMINA, nine united filaments, and one ſingle, having roundiſh antheræ. PISTILLUM, a taper germen, ſubulate ſtyle, and blunt ſtigma. PERICARPIUM, a pod of two cells, and kidney-ſhaped ſeeds.

There are upward of twenty ſpecies; thoſe of them principally cultivated in the Engliſh gardens are,

[1]ASTRAGALUS *Alopecuroides.*

*Fox-tail Alpine Biennial Milk-Vetch.*] Aſtragalus with upright hairy ſtalks a yard high, ornamented with long-winged leaves, of about twenty pair of oval lobes, terminated by an odd one; and from the places of the leaves proceed large, cylindrical, cloſe-ſitting ſpikes, wholly covered with down, out of which appear yellow flowers, ſucceeded by woolly pods; flowers in June and July.

[2]ASTRAGALUS *Galegiformis.*

*Goat's-Rue-leaved Oriental Perennial Aſtragalus.*] Aſtragalus with upright ſmooth ſtalks four feet high, adorned with long-winged leaves, of about fourteen to twenty pair of oval lobes, ending in an odd one; and from the places of the leaves, long hanging ſpikes of yellow flowers, ſucceeded by triangular pods, appearing in June and July.

[3]ASTRAGALUS *Chriſtianus.*

*Great Yellow Oriental Perennial Milk-Vetch.*] Aſtragalus with erect ſtalks a yard high, large long-winged leaves, having many pair of oval lobes, ending in an odd one; and all along the ſtalks, from the angles of the leaves, proceed globular cloſe-ſitting cluſters of large bright yellow flowers, appearing in July.

[4]ASTRAGALUS *Cicer.*

*The Cicer Sylveſtre, or Globular Podded Perennial Aſtragalus.*] Aſtragalus with proſtrate ſtalks three feet long, winged leaves, of about ten pair of ſmall oval lobes, terminated by an odd one; and from the angles of the leaves grow ſmall ſpikes of yellow flowers, ſucceeded by globular ſwollen pods, flowering in July.

The firſt of theſe ſpecies is a biennial plant; the other three are perennials.

They are all very hardy, and will proſper in any of the common borders, or ſhrubbery clumps, and flower and perfect ſeed annually.

Their propagation is by ſeed. Sow it in ſpring in a bed or border of common earth, and the plants will ſoon come up; all they require is weeding till autumn, when they ſhould be tranſplanted into the places where they are to remain, when they will flower next ſummer.

As the Fox-tail Aſtragalus is apt to die away after it has flowered, ſome plants ſhould be raiſed annually.

[5]ASTRAGALUS *Tragacantha.*

*The Common Tragacanth Shrub, or Goat's-Thorn.*] Aſtragalus with many ſhrubby, procumbent, prickly, white ſtalks and branches, ſpreading every way a foot or two in length, adorned with winged, ſilvery-white leaves, of ſix, eight, or ten pair of lobes, ending in an odd one, having their foot-ſtalks terminated by a ſharp thorn, and white flowers in cluſters from the ſides and end of the branches, appearing in June and July, but not ſucceeded by ſeeds in England.

*Varieties of this are.*] Goat's-thorn with oval lobes to the leaves—with ſpear-ſhaped-lobes—with ſpear-ſhaped, pointed, very downy lobes—and with purple flowers, red flowers, &c.

This ſpecies and varieties retain their leaves long, and when they drop, the foot ſtalks remain in form of acute thorns, and as armature to the plants.

They ſucceed in the ſhrubberies in a warm dry ſituation, but as they are ſomewhat tender while young, ſome ſhould alſo be kept in pots, to have occaſional ſhelter of a frame or green-houſe during winter.

Their propagation may be effected eaſily by ſeed, if it can be procured, ſowing it in a bed of common earth in April; but in default of ſeed, they may alſo be encreaſed plentifully by ſlips and cuttings of their young ſhoots in April or May, planting them in pots, which plunge in a moderate hot-bed about ſix weeks, giving occaſional ſhade and water; and harden them gradually to the open air.

ASTRANTIA, Maſterwort.

This genus furniſhes two ſpecies of herbaceous perennials, growing from one to two feet high, ornamented with large divided leaves, and crowned by umbellate flowers.

Claſs and order, *Pentandria Digynia.*

*Characters.*] CALIX, the flower is umbellate, each umbel formed, of four or five ſmaller ones: the general calix, or involucrum, conſiſts of eight or ten leaves; that of the ſmall umbrel, of about twenty, which are long, coloured, and ſpreading. COROLLA, each umbel have many florets, each formed of five erect, bifid, incurved petals. STAMINA, five filaments. PISTILLUM, an oblong germen, two ſtyles, and ſimple ſtigma. PERICARPIUM, an oval two-parted fruit, having two ſeeds.

The ſpecies are,

[1]ASTRANTIA *Major.*

*Great Black Maſterwoot.*] Aſtrantia with upright ſtalks about two feet high; many large, ſpreading, radical leaves, divided into five large, oval, deeply-ſerrated lobes; thoſe on the ſtalk trilobate and pointed, one leaf at each joint, and the top of every ſtalk and branch crowned by an umbel of flowers.

*Varieties.*] Great Maſterwort, with purple flowers—with white flowers.

[2]ASTRANTIA *Minor.*

*Leſſer Black Maſterwort.*] Aſtrantia with ſtalks about a foot high, digitated or fingered leaves, of ſeven or eight deeply ſawed ſegments, and all the branches terminated by the umbels of flowers.

The roots of theſe plants are large, fibrous, ſpreading, black without, and of many years duration.

The plants are very hardy; they are conſidered chiefly as plants of ornament; tho' they effect no great figure, they however afford variety in large gardens, where it is neceſſary to have many plants of eaſy culture.

Their propagation is by ſeed in the common ground, or by parting the roots, both of which may be performed any time, in open weather, from October till March.

ATRAPHAXIS.

This genus retains two ſhrubby plants of the green-houſe, garniſhed with ſmall ſimple leaves, and cluſters of two petalous flowers.

Claſs and order, *Hexandria Digynia.*

*Characters.*] CALIX, two-coloured permanent leaves. COROLLA, two roundiſh petals. STAMINA, ſix capillary filaments, and roundiſh antheræ. PISTILLUM, a compreſſed germen, no ſtyle, but two ſtigma. PERICARPIUM none, the ſingle ſeed being encloſed in the calix.

The ſpecies are,

[1]ATRAPHAXIS *Spinoſus.*

*Prickly Oriental Atraphaxis.*] Atraphaxis with a woody ſtem and branches four or five feet high, armed with ſharp ſpines; ſmall, ſpear-ſhaped, aſh-coloured, ſmooth leaves; and cluſters of white flowers from the ends of the branches, appearing in Auguſt, but no ſeed in England.

[2]ATRAPHAXIS *Undulata.*

*Waved-leaved Smooth African Atraphaxis.*] Atraphaxis with ſhrubby, trailing, unarmed ſtalks; garniſhed with ſmall, oval, waved, curled leaves; and greeniſh white flowers from the angles of the leaves, appearing in June and July, but no ſeed in England.

Theſe two ſpecies muſt always be kept in pots, to be moved to a green-houſe in winter.

Both the ſpecies are eaſily propagated by cuttings in ſpring and beginning of ſummer.

ATRIPLEX, Orach, or Arach; alſo the *Halimus*, or Sea-Purſlane Shrub.

This genus furniſhes herbaceous and ſhrubby plants; the former are conſidered chiefly as eſculent culinary herbs, the latter as plants of ornament, being adorned with curious ſilvery leaves.

Claſs and order, *Polygamia Monœcia.*

*Characters.*] Hermaphrodite and female flowers apart on the ſame plant. CALIX, five oval, concave, membraneous-bordered, permanent leaves in the hermaphrodites, and two large, plane, erect, acute ones in the female flowers. COROLLA, none. STAMINA, five filaments, and double antheræ. PISTILLUM, an orbicular germen, two-parted ſtyle, and reflexed ſtigma. PERRICARPIUM none, the ſeed being lodged in the calix.

The ſpecies are,

[1]ATRIPLEX *Hortenſis.*

*Garden Herbaceous Orach.*] Atriplex with large triangular leaves, and when it runs to ſeed, ſhoots up erect herbaceous ſtalks; flowers in June and July, and ripen ſeeds in Auguſt.

*Varieties.*] Garden Orach with dark green leaves—whitiſh green leaves—with purple leaves.

All theſe varieties are annual herbs; they were formerly much cultivated in kitchen-gardens, for culinary purpoſes, in the manner of ſpinage, and require exactly the ſame culture, the ſeeds being ſown where they are to

to remain annually in ſpring for ſummer uſe; alſo in autumn, to ſtand the winter for ſpring ſervice, hoeing the plants to four or five inches diſtance.

[2]ATRIPLEX *Halimus.*

*The Halimus, or Sea-Purſlane Tree.*] Atriplex with a ſhrubby ſtalk, branching out widely on every ſide, grows four or five feet high, ornamented with white, ſilvery, deltoid, entire leaves, being ſhaped like the Greek letter *Delta*, remaining all the year, and effects a ſingularly agreeable variety at all ſeaſons, but the flowers have no beauty.

It is a maritime plant of Spain, Portugal, and Virginia, but ſucceeds here in the full ground.

[3]ATRIPLEX *Portulacoides.*

*Common Sea-Purſlane.*] Atriplex with a ſhrubby ſtalk, ſending out numerous wide-ſpreading branches, grows three or four feet high, very buſhy, adorned with numerous, ovate, narrow, whitiſh, ſilvery leaves.

This is a ſea-ſide plant of England, and is ſometimes admitted in gardens.

Theſe two ſhrubby Atriplexes, by their ſilvery-coloured leaves, effect an agreeable contraſt, in aſſemblage with other ſhrubs, in any part of the pleaſure-ground.

Their propagation is by cuttings planted in a ſhady border in ſpring and beginning of ſummer; they will readily take root, and be fit to tranſplant in autumn.

ATROPA, *Belladona*, or Deadly Night-Shade; and the *Mandragora*, or Mandrake.

This genus retains two hardy herbaceous perennials, and one ſhrubby plant of the green-houſe, garniſhed with ſimple leaves, and bell-ſhaped flowers, cultivated in gardens more for ſingularity than utility or beauty.

The *Mandragora*, or Mandrake, ſo called from the feigned reſemblance of its large, long, fleſhy root, to the human figure, was always ranged as a diſtinct genus, till Linnæus lately diſcovered its characters to be the ſame as the *Atropa*, and ſo ranges it as a ſpecies of that genus.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX is monophyllous, ſwelling, acutely five-parted at top, and permanent. COROLLA is monopetalous, bell-ſhaped, with a ſhort tube below, ſwelling, five-parted, and ſpreading above. STAMINA, five awl-ſhaped filaments attached to the baſe of the corolla, connected below, and large aſſurgent antheræ. PISTILLUM, a ſemi-oval germen, filiforme ſtyle, and oblong tranſverſe ſtigma. PERICARPIUM, a globoſe bilocular berry, ſitting on the calix, containing kidney-ſhaped ſeeds.

The ſpecies are,

[1]Firſt ſpecies, ATROPA *Belladona.*

*The Belladona, or Deadly Night-Shade.*] Atropa with herbaceous, ſtrong, branching, purple ſtalks, four or five feet high, ornamented with large, oval, entire leaves, placed alternate; and from the angles or places of the leaves, proceed many long foot-ſtalks, each ſupporting one bell-ſhaped, browniſh-purple flower, ſucceeded by large ſhining black berries of deadly quality.

It flowers and ripens its fruit from June or July until Michaelmas.

This is a wild plant of Britain, but being a robuſt, conſpicuous perennial, is admitted in many gardens, to form variety in the pleaſure-ground. It ought, however, to be diſpoſed with great caution out of the way of children, on account of the noxious quality of the fruit, which being the ſize and colour of black cherries, appear very beautiful and tempting; and taken internally, they cauſe a ſtupor, delirium, and convulſions, and without the ſpeedy and copious uſe of acids, ſuch as vinegar, juice of lemons, &c. ſoon prove mortal.

The freſh leaves of this plant applied to hard tumours, and ſchirrhous ſwellings on the breaſt, are a certain remedy.

The propagation of this ſpecies is effected abundantly by ſlips or off-ſets from the root in autumn or ſpring; alſo by ſeed in a bed of common earth, from which tranſplant the plants in autumn.

[2]Second ſpecies, ATROPA *Mandragora.*

*The Mandragora, or Mandrake Plant.*] Atropa with a very large, long, parſnep-like root; no ſtalk, but the root crowned with many large pointed leaves, devoid of foot-ſtalks, about a foot long, almoſt half as broad, ſpreading in a circular cluſter, and in the midſt riſe the foot-ſtalks of the flowers three inches long, each ſupporting one whitiſh-green flower, ſucceeded by large, round, yellowiſh berries.

It flowers in March or April, and the fruit ripen in July.

This ſpecies is very durable in root, which are ſaid to remain ſound and vigorous half a century at leaſt.

It is retained in many curious gardens, as a plant of ſingularity.

Its propagation is by ſeed, in a bed of light earth, ſown in autumn or ſpring, either where they are to remain, or the plants may be tranſ-

planted in autumn into different borders for variety, placing them in dry ground, where they will abide an age, encreaſe exceedingly in magnitude, and flower and perfect ſeed annually.

This is ſuppoſed to be the Mandrakes mentioned in Scripture, and the fruit are ſaid to have vaſt power in procuring fruitfulneſs to women.

Of the root of this plant many ridiculous ſtories have been invented by quacks, relative to its fancied reſemblance to the human form, it acquiring conſiderable ſubſtance, and ſtrikes three or four feet deep, dividing frequently into large, long, fleſhy forks, which impoſtors made to reſemble the legs, thighs, and arms of the human body, and ſhewed it about the country, advancing ſtrange accounts of its ſingularity, too idle to be regarded; ſuch as its ſenſation of feeling, by emitting groans at the approach of violence, and to cauſe inſtant death to him who ſhould attempt to root it out of the ground. So greatly were theſe impoſtures palmed upon the credulous formerly, that in default of the real *Mandragora*, Mandrakes, or images, were formed of the large roots of briony, effected by opening the earth in ſpring about a ſtrong-ſhooting young plant, without diſturbing the lower fibres, ſo fixing a figure-mould about it, then filling in the earth, and by autumn the root aſſumes the deſired form; they alſo ſometimes artfully carved a large root, as it grew, to a ſort of reſemblance, ſo filling in the earth again, and by the end of ſummer the carved parts would be cruſted over, ſo as to hide the artifice.

[3] Third ſpecies, ATROPA *Frutiſcens*.

*Shrubby Deadly Night Shade of Spain* ] Atropa with a ſhrubby very branching ſtalk, grows ſeven feet high, garniſhed with roundiſh oval leaves alternately, and footſtalks in cluſters from the wings of the leaves, ſupporting yellowiſh brown-ſtriped flowers, which are not ſucceeded by berries in England.

This plant muſt always be kept in pots, and wintered in a green-houſe.

It may be propagated by ſeeds procured from abroad, which muſt be ſown in pots in ſpring, and plunged in a hot-bed, juſt to raiſe the plants.

AVENUES In gardening Avenues are conſidered to be large ſtrait walks, bounded on each ſide with one or two rows of noble foreſt trees, deſigned ſometimes as a principal way from the common road to the manſion of a country ſeat, and often to form views, or to lead to different diſtricts.

In the acnient ſtyle of gardening, theſe kind of walks were conſidered as great ornaments; no country ſeat was without them, and many ſtill permit the old ones to ſtand: ſometimes ſeveral were extended from the manſion in different directions; frequently a grand one was extended directly from the main front of the dwelling to the neareſt common road; others were deſigned chiefly as ornaments, and ſome as views terminating in that of ſome diſtant natural object, or that of the united work of art and nature, and ſome were concluded by domeſtick works, as an obeliſk, temple, alcove, ruins, or other garden edifices; ſometimes by natural or artificial mounts, woods, groves, receſſes, bowers, &c which Avenues, when diſpoſed with propriety, and planted with different noble trees, aſſumed a grand appearance.

But modern planners rarely admit any ſuch thing as a regular Avenue in their deſigns; even often demoliſh entirely the old ones of a century or two ſtanding, copying nature to ſuch an extreme, that nothing having the appearance of art or regularity can be admitted.

Regular Avenues, however, about extenſive ſeats, detached in parks, &c. always exhibit an air of grandeur, though I ſhould adviſe to have the principal front of the manſion entirely open, or unincumbered with theſe or any kind of plantation; for it is a great abſurdity to hide a good front, and obſtruct the proſpect: no avenue can therefore be admitted with propriety in that part of the ground. A ſpacious lawn of graſs ſhould always be exhibited in due extenſion in the moſt conſpicuous fronts of the dwelling. See LAWNS. But in a direction from the wings, detached at ſome conſiderable diſtance, Avenues might with more propriety be introduced and extended on each ſide of ſpacious lawns, ſerving by way of boundary, and backed up next the lawn with ſhrubs and lower trees, diſpoſed irregularly, and if the Avenues are carried in an oblique direction, the lawn will widen gradually, and the proſpect will be more copious, or Avenues might be admitted at ſome diſtance from either end or back front of the dwelling, in either of which ſituations an Avenue may be extended towards any common road, village, or town, one or more ſerving as the common entrance or Avenue leading to the habitation, others by way of ornament, &c. and in extenſive ſituations, Avenues might occupy

cupy different parts at a diſtance directed towards woods, groves, or edifices, and particular diſtricts about an eſtate, which when of conſiderable width, and bounded on each ſide with the nobleſt progeny of the foreſt, gives an air of dignity to the ſite.

Theſe Avenues ſhould be planted with the ſtatelieſt trees; and an aſſemblage of different ſorts, effects the more agreeable variety.

The width of the Avenue ſhould never be leſs than ſixty feet, but when it is to be extended any conſiderable length, a hundred feet wide is not too much, eſpecially when we conſider that as the trees grow up, the branches on the oppoſite ſides continuing to approach each other, which by degrees greatly contract the view, ſo that if a conſiderable width is not at firſt adopted, the Avenue would in time appear very narrow and trifling.

The trees in the rows on each ſide ſhould be planted thirty feet diſtance at leaſt, that the different trees may have full ſcope to diſplay their heads, and each ſort exhibit itſelf conſpicuouſly, according to its own natural form.

The ſorts of trees proper for Avenues, are of the diciduous tribe; the elm, lime, platanus, beech, cheſnut, horſe-cheſnut, abele-tree, or white poplar, ſycamore, Norway maple, Virginia maple, walnut-tree, wild cherry-tree; all of which are of lofty growth; and an aſſemblage of all, or part, will have a fine effect diſpoſed in Avenues.

Sometimes evergreen trees are uſed for Avenues: where this is intended, the moſt proper ſorts are various ſpecies of the *Pinus*, or pine-tree, including all the ſorts of firs, moſt of which attain a great height and magnitude, with beautiful ſpreading heads, and are extremely ornamental.

Rural Avenues, as common ways or roads through a park, &c. to a habitation, may be contrived either in a direct line, or carried round in a moderate ſweep, or the courſe directed in two, three, or more, very gentle bends, or eaſy ſerpentine turns, each ſide ornamented with different ſorts of trees, thinly diſperſed in a rural taſte; that is, ſome placed ſingly, others in groupes of two, three, or more together, exhibiting them variouſly, ſome breaking forward, others ſtanding more back; and for the greater diverſity, may introduce here and there a clump of tall flowering ſhrubs, having, the whole, the ſingle trees, groupes, and clumps, ſo conſiderably detached, as to admit of a full proſpect of the adjacent lawns, fields, or plantations, during the whole excurſion of the Avenue.

The trees that form any ſort of Avenue, whether deciduous or evergreen, ſhould all be permitted to take their own natural growth.

AURANTIUM, the Orange-tree. See CITRUS.

AURICULA *Urſi*, Bears-ear, or Auricula. See PRIMULA.

AUTUMNAL *Plants*, Plants that flower in autumn.

AUTUMNAL SEASON. The Autumn ſeaſon being very often mentioned in the courſe of this work, it may be neceſſary to obſerve, that in regard to the numerous works directed to be done in that ſeaſon, we commonly conſider it to be from about the beginning or middle of Auguſt, till the latter end of November, in which period many works of ſowing, planting, and propagation, is ſucceſsfully performed.

As for inſtance, many ſorts of eſculent plants are ſown to ſtand the winter for ſpring, ſuch as cabbage, cauliflower, carrots, lettuce, ſpinach, onions; and in October and November, beans, peas; planting out alſo early cabbage-plants; likewiſe cauliflowers under hand and bell glaſſes, where they are to remain, and pricking others thick in frames, to ſtand till ſpring; planting out lettuces on warm borders, and in frames, to ſtand the winter; alſo celery in ſhallow trenches, for ſpring ſervice; making and ſpawning muſhroom beds, for winter and ſpring uſe.

Many ſorts of fibrous-rooted flower-plants are encreaſed at this ſeaſon, by dividing or parting their roots, particularly in the months of September, October, and November, when the flower-ſtems decay, and the ſlipped or divided parts will all flower the year following.

Likewiſe, from the middle of September until the middle or end of November, is a proper time to tranſplant from one place to another almoſt every kind of hardy fibrous-rooted perennials, as directed each under its proper genera.

It is alſo a proper time to plant all ſorts of bulbous flower-roots that were taken up in ſummer, which being now planted, exhibit an early ſpring and ſummer bloom.

Seeds of many ſorts of flowers are alſo now to be ſown, which do not grow ſo freely when ſown at other ſeaſons, as expreſſed in their reſpective places in the courſe of the work.

In this ſeaſon alſo, from the middle of September till the end of November, is the beſt time

time to plant cuttings, and make layers, for the propagation of numerous hardy trees and ſhrubs.

Seeds of many ſorts of hardy trees and ſhrubs are alſo to be ſown in October and November.

The principal Autumnal planting ſeaſon for all ſorts of hardy trees and ſhrubs, both fruit, foreſt, and ornamental kinds, is from about the middle of October to the end of November.

AXILLA, the angle formed by the ſtem and branch; and leaves proceeding immediately from that part are termed axillary leaves.

Likewiſe flowers proceeding from the angle, formed by the leaf and branch, are termed axillary flowers.

AZALIA, American Upright Honeyſuckle.

This genus furniſhes our ſhrubberies with two hardy, diciduous, flowering ſhrubs, of moderate growth, ornamented with oblong ſimple leaves, and funnel-ſhaped flowers in cluſters.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX is ſmall, five-parted at top, coloured, and permanent. COROLLA is a funnel-ſhaped petal, having a long tube below, and divided at top into five reflexed ſegments. STAMINA, five filaments inſerted into the receptacle, and ſimple antheræ. PISTILLUM, a round germen, long permanent ſtyle, and blunt ſtigma. PERICARPIUM, a roundiſh capſule of five cells, and numerous roundiſh ſeeds.

The ſpecies are,

[1]AZALEA *Viſcoſa.*

*Viſcous Flowered White Azalea.*] Azalea with ſeveral ſhrubby branching ſtems, riſing three or four feet high, garniſhed with ſpear-ſhaped, narrow-baſed, rough-bordered leaves, in cluſters towards the end of the branches, and with all the branches terminated by white, hairy, glutinous flowers, coming out between the leaves in cluſters.

[2]AZALEA *Nudiflora.*

*Naked-flowered Red Azalea.*] Azalea with ſeveral woody branching ſtems, riſing ſeven or eight feet high, decorated with oblong, oval, ſmooth, entire leaves, placed alternate, and long footſtalks proceeding from the ſides of the branches, ſupporting cluſters of large red flowers, having the longeſt ſtamina.

The flowers of both theſe ſpecies are beautiful and fragrant, and bear ſome reſemblance to the common Honeyſuckle, being formed each of a ſingle petal, having a long tube, divided at top into five reflexed parts. See the *Characters.*

They flower annually in July, but never perfect ſeeds in England.

For purpoſes in gardening, both the ſpecies are well adapted for the ſhrubbery, and will ſucceed in any common ſoil, though they delight moſt in ſhady moiſt places.

As to their propagation, they not producing ſeed here, are commonly encreaſed by laying the young ſhoots in autumn, or ſpring; or that, as many ſtems or ſhoots generally riſe from each root, ſome of theſe may be taken off with roots, and planted either in nurſery rows, or where they are to remain.

The ſeeds of both ſorts are alſo often imported from America by the ſeedſmen, which ſhould be ſown in ſpring in a warm ſituation, or their germination may be facilitated by aid of a moderate hot-bed.

# B.

BACCA, a berry, defined to be a pulpy pericarpium, or ſeed-veſſel, generally round or oval, without a valve, incloſing ſeveral ſeeds, moſtly placed upon foot-ſtalks within the pulp, as in the gooſeberry, currant, raſpberry, &c.

The berry does not naturally gape or burſt for the diſperſion of ſeeds, being deſigned to be performed by means of animals.

By Linnæus, not only the currant, gooſeberry, raſpberry, ſtrawberry, &c. but alſo the very different fruits; the apple, pear, quince, medlar, love-apple, orange, lemon, and pine-apple, are all denominated berries.

BACCHARIS, Ploughman's Spikenard.

Of this genus are three exotic ſhrubs of the green houſe, growing five or ſix feet high, ornamented with ſimple leaves, and compound flowers.

Claſs and order, *Syngeneſia Polygamia Superflua.*

*Cha-*

*Characters.*] Compound flower. CALIX is a cylindrical, acutely ſcaly, general cup containing many florets. COROLLA, the general flower is equal, the hermaphrodite and female florets are intermixed. STAMINA, five filaments in each hermaphrodite floret, and cylindrical antheræ. PISTILLUM, in all the florets an oval germen, filiforme ſtyle, and bifid ſtigma. PERICARPIUM, none; the ſeeds are one under each floret, crowned with down.

The ſpecies are,

[1]BACCHARIS *Ivafolia.*

*Iva-leaved American Baccharis.*] Baccharis with ſhrubby branching ſtems, four or five feet high; long, ſpear-ſhaped, venoſe, dentate-ſawed leaves; and whitiſh flowers from the ſides and ends of the branches, in July and Auguſt.

[2]BACCHARIS *Neriifolia.*

*Oleander-leaved African Baccharis.*] Baccharis with ſhrubby ſtems riſing ſix or ſeven feet high, branching out upward, garniſhed with ſpear-ſhaped ſtiff leaves, a little indented at top, and greeniſh-white flowers, in cloſe ſpikes from the ends of the branches, in July and Auguſt.

[3]BACCHARIS *Halimifolia.*

*Halimus-leaved Baccharis, or Virginia Groundſel-tree.*] Baccharis with a ſhrubby branching ſtem, riſing ſeven feet high, ornamented with oboval, emarginate-dentated, glaucous-coloured leaves, continuing all the year, and many ſmall white flowers, in September and October.

They flower here annually, and the firſt and ſecond ſorts furniſh ſeeds; but the third flowering late, rarely produce any in England.

Theſe three ſhrubs are generally conſidered as green-houſe plants; they are however ſo hardy as to be able to ſtruggle with our ordinary winter in warm ſhrubberies, in which departments they are ſometimes planted to take their chance; but as they are ſubject to be much cut in ſevere froſts, ſome of each ſort ſhould alſo be potted, in order to be houſed in winter.

The propagation of all three ſorts is by layers and cuttings of the young ſhoots, any time from March till Midſummer, in pots or the common ground, giving occaſional ſhade and waterings, particularly the cuttings, and they will be rooted and fit to tranſplant into ſeparate pots in autumn.

They may alſo be raiſed from ſeeds, in a bed of common earth, in March or April.

BACCIFERÆ *Planta*, Bacciferous, or Berry-bearing Plants, and ſuch that have a bacca, or berry, for their ſeed-veſſel or pericarpium. See PERICARPIUM.

BARBA, a Beard, alluding to bearded plants, being ſuch whoſe leaves or flowers are terminated by a bunch or tuft of down, or hairs. The *Meſembryanthemum Barbatum* furniſhes an example.

BARBATUS *Flos*, bearded, gaping, or ringent flowers.

A flower having two lips, the lower of which is the beard, *Barba*, and ſtands oppoſed to *Galea*, the upper-lip. Vide COROLLA *rignens*, and GALEA.

BARK-BEDS, Hot-beds formed of tanner's-bark, and ſuch that ſupport the moſt uniform and durable temperature of heat, and the beſt calculated hot-beds yet known, for the cultivation of all ſorts of tender exotics from the warm parts of America, Aſia, and Africa, that require the continual aid of artificial heat to maintain them in this country.

Theſe hot-beds, with a little aſſiſtance, as hereafter directed, often ſupport a regular temperature of heat almoſt a twelvemonth.

It is theſe bark or tan hot-beds that are univerſally uſed in hot-houſes, and are called the bark-beds, there being a cavity or pit formed within the hot-houſe almoſt its whole length, ſix or ſeven feet wide, and three deep, and walled round with brick; ſee HOT-HOUSE; and in which pit is made the bark hot-beds, the uſe of which is to plunge the pots in, containing all ſorts of tender exotics from warm countries; and by the aid of which principally, with occaſional aſſiſtance of actual fire, we are enabled to cultivate in the greateſt perfection that very curious exotic perennial, the *Bromelia Ananas*, or pine-apple; alſo all other tender plants from every quarter of the world; for by the joint aid of theſe bark hot-beds, and fire heat, we are able to imitate, within the hot-houſe, the temperature of diſtant climates, ſo far as to raiſe and exhibit in health, duration, and beauty, every known plant, herbaceous, or woody, from the warmeſt parts of the globe, which before the uſe of bark-beds were thought impoſſible to be cultivated in England.

Theſe bark hot-beds are alſo made in pits formed in the open ground, diſtinct and detached from the hot-houſe, which pits are walled round, having a frame of wood at top, for ſupport of glaſs lights, and are deſigned chiefly

chiefly for the propagation of tender plants from ſeed, cuttings, ſuckers, &c. without incumbering the hot-houſe, or ſtove departments, which are often ſo crowded, as not to admit of ſuch work; theſe are commonly called pits, or bark pits, and are very uſeful where there are great collections of tender exotics, and ſerve alſo as a nurſery for young Pine-apple plants, for the annual ſupply of the ſtove, or main pinery. See BARK PIT.

Bark hot-beds are alſo ſometimes uſed in the culture of melons, which, on account of their regular and durable heat, generally afford excellent crops: the Dutch practiſe this with great ſucceſs. See CUCUMIS *Melo*, the Melon.

Theſe kind of hot-beds are alſo uſed with great ſucceſs in forcing-frames, for the production of early fruit, ſuch as apricots, peaches, grapes, &c. See FORCING-FRAMES.

Hot beds made of this material, are conſiderably more regular and durable in heat than thoſe of dung, and not, like them, liable to injure plants by ſteam; and as to duration, they commonly maintain a due temperature of heat almoſt a year, with the aſſiſtance of forking or turning over two or three times, together with the addition, once, of about one third part of new tan; but they muſt be entirely renewed every autumn or ſpring, as hereafter directed.

This article tanner's bark, of which theſe hot-beds are made, is the bark of the oak-tree, chopped or ground to pieces for the uſe of the tanners, which after being uſed by them in their tan-vats, is fit for the gardeners purpoſe, wherewith to make hot-beds, for which, there being now ſo great a demand all over the kingdom, the tanners ſell it at a good price, which about London is commonly ſeven and ſix pence per cart-load of ſixty buſhels, or in proportion. The places about that city where the greateſt choice is to be had, is principally in the Borough of Southwark, where are numerous conſiderable tan-yards, particularly in the parts called the Grange-road, Long-lane, Barnaby-ſtreet, Bermondſey, and places adjacent.

In the choice of the bark or tan, obſerve there are different ſorts, ſuch as the large or coarſe, the middling, and the ſmall ſort, which laſt is the worſt of all; the large ſort is longeſt before it heats, and the heat is apt to be violent at firſt, though of the longeſt duration; the middle-ſize ſort heats moderately ſoon, and regular, ſeldom very violent, and is pretty durable; the ſmall ſort heats the ſooneſt of any, though more weak, and ſoon becomes earthy, whereby its fermenting property is ſoon exhauſted, and ſhould never be uſed alone, where any other can be poſſibly procured; this ſort however is now very common in the tan-yards, for the tanners find a conſiderable advantage for their uſe by grinding the bark ſmall, becauſe it goes the fartheſt

Therefore where there is choice, the middle ſize ſort is to be preferred, or a mixture of this and the large, and but as little of the ſmall as poſſible.

Likewiſe obſerve to procure ſuch that is freſh, i. e that has been about a week or fortnight, or at moſt not more than three weeks or a month out of the tan-pit, rejecting ſuch that have lain ſo long as to have become black and earthy.

When the tan is brought home, if it is very wet, it is eligible, previous to forming it into a bed, to diſpoſe it in ſmall heaps or ridges for two or three days, or till it is drained of the redundant moiſture, which would greatly retard its regular fermentation.

The time of year to make theſe beds is principally in autumn and ſpring. In hot-houſes, for pine-apple plants, &c. they are commonly made in September or October, to have a good heat during winter; but when they are required for the purpoſe of raiſing tender exotics from ſeed or cuttings, &c. they are generally made in ſpring, as alſo for melons, and forcing-frames.

The dimenſions of the bed is to be the width and length of the pit in which it is made, and a yard deep.

In making the bark-bed, the tan is to be thrown into the pit prepared for its reception, as before obſerved; and a hand or two beginning at one end, work the whole up regularly with the tan-fork to the bottom, carrying the bed to its full width and depth on before you; for it is not proper to tread much upon the bark when formed into a bed, which would render it too compact, and prevent its regular fermentation, raiſing the whole three or four inches higher than the kirb or top of the wall of the pit in which the bed is made, to allow for ſettling.

As ſoon as the bed is made, thruſt two or three long ſticks into the bark in different parts, to draw up occaſionally to feel their lower end, to inform you of the temperature of the heat.

In

In a fortnight, or perhaps in a little more or leſs time, the bed will be arrived at a due temperature of heat for the reception of the plants, of which you are to judge by the above mentioned ſticks, obſerving, if it is intended for pines, or other plants in pots, they are to be plunged immediately into the bark, there being no occaſion for earth thereon, as in dung hot-beds; and when you proceed to plunge them, it is eligible to lay a board acroſs to ſtand upon, to prevent treading the bark too cloſe; likewiſe having regard, if the heat is apparently violent, to plunge the pots only half way, leſs or more, as you ſhall judge neceſſary to preſerve the roots of the plants from being ſcorched, and when the vehement heat ſubſides, plunge them down to their rims.

The bed being thus made, it will ſupport its firſt heat a quarter of a year at leaſt, when if, by the trying ſticks, you find it upon the decline, it is to be revived by ſtirring up, or turning over the bark, which, if it is the large, or the middle-ſize ſort, it will not at this time require any augmentation of freſh tan. Previous to the turning, firſt take up all the pots, then beginning at one end, fork up the bark quite to the bottom, breaking the lumps, and turn the whole over, and directly plunge the pots as before; this operation will renew the heat, and ſupport it in a proper temperature two or three months longer, when the ſame work of turning, with the addition of about one third part of freſh tan is neceſſary, blending the whole together, continuing to repeat the ſame operation of turning as often as you ſhall find the heat decline; about twice or thrice in the courſe of the year is ſufficient.

It is always neceſſary, in March or April, to add about one third, at leaſt, of freſh tan, previouſly clearing out all the moſt crumbly or earthy old ſtuff at top and next the outſide, then throwing in as much new as will fill up the pit, fork the whole up neatly, old and new together.

Every autumn, in September or October, it is proper to renew entirely the bed in the hot-houſe and bark pits; for after it has been made ten or twelve months, the bark will be greatly exhauſted both in heat and ſubſtance, ſo as to become earthy, which, at the time you intend to make the new bed, ſhould be previouſly ſcreened, and all that paſſes through the ſcreen to be cleared away; ſo adding to the remaining old, as much new tan as will fill up the pit, then working the whole regularly together with the fork. See HOT-HOUSE. But where the old tan is very earthy, it is proper to clear it out entirely, and make the bed wholly of new materials.

BARK-PIT. In hot-houſes a Bark-pit is the cavity, wherein the bark hot-bed is made. See BARK-BED, HOT-HOUSE, &c.

A Bark-Pit is alſo an erection, covered with glaſs, formed ſeparately or diſtinct from the hot-houſe, but in a manner connected with it, as its chief uſe is by way of a nurſery for that department, being uſeful for raiſing all kind of tender exotics from ſeeds, cuttings, ſuckers, &c. and retaining them till a certain period, or till arrived at a proper ſtate of growth, to be removed to the ſtove, and is particularly uſeful for the young ananas, or pine-apple plants, in rearing and nurſing them till of a proper ſize to be placed in the ſucceſſion-houſe or fruiting-ſtove.

Theſe pits are commonly erected in a defended ſunny ſituation contiguous to the hot-houſe, and are formed moſt commonly with a wall of brick or ſtone, with flues behind, and with a frame of wood at top for the ſupport of glaſs.

The dimenſions are, the length from ten to as many feet as convenient, ſix or ſeven wide, and ſunk not more than eighteen inches in the ground in caſe of wet, and the whole to be walled round with brick from the bottom, raiſing it four or five feet in front, and five or ſix behind, the ends in proportion, with two flues near the upper part of the back wall, to make fires occaſionally in winter, to warm the air, and a timber plate or kirb, framed round the top with croſs-bars three feet four inches aſunder, for the ſupport of glaſs lights.

In this pit a bark-bed is made the whole length and width, and about a yard deep in tan, which will be ready for any ſort of tender plants, ſeeds, and cuttings, and its heat is continued by forking it over, and a ſmall addition of new tan, as directed under the article BARK-BED.

But when pits are required principally for raiſing tender plants from ſeed, cuttings, &c. in ſpring or ſummer, there need not be any flues or fire place.

BARLERIA. It contains ſeveral hot-houſe exotics, herbaceous and ſhrubby plants, riſing three or four feet high, having ſimple, oblong, or oval leaves; monopetalous, funnel-ſhaped, blue flowers, with four ſtamina, and one ſtyle.

They are rare in England, but may be raiſed from ſeeds in the ſtove.

BASELLA, Climbing Night-Shade of Malabar.

This genus retains two climbing, herbaceous, ſucculent, hot-houſe perennials, garniſhed with ſimple leaves, and monopetalous pitcher-ſhaped flowers.

Claſs and order, *Pentandria Trigynia.*

*Characters.*] CALIX, none. COROLLA, a pitcher-ſhaped, fleſhy, permanent petal, connivent and ſix or ſeven-parted at top. STAMINA, five filaments attached to the corolla. PISTILLUM, a globular germen, three ſlender ſtyles, with oblong ſtigmas. PERICARPIUM, the permanent corolla aſſumes the appearance of a fleſhy berry, incloſing one ſeed.

The ſpecies are,

[1]BASELLA *Rubra.*

*Red Malabar Night-Shade.*] Baſella with climbing, ſtrong, ſucculent, deep purple, herbaceous ſtalks and branches, mounting, upon any ſupport, eight or ten feet high, adorned with heart-ſhaped, ſucculent, purple leaves, and foot-ſtalks from the ſides and ends of the branches, ſupporting reddiſh flowers.

[2]BASELLA *Alba.*

*White Small Malabar Night-Shade.*] Baſella with climbing, ſmall, ſucculent, very branchy green ſtalks; oblong-oval, waved, flaccid leaves; and long foot-ſtalks from the ſides of the branches, ſupporting white flowers.

*Variety.*] Baſella with ſmall purple ſtalks, and variegated leaves.

The flowers of both ſpecies appear from June till October, and are ſucceeded by plenty of ſeeds.

The plants are preſerved here in ſtoves, more for ſingularity than beauty.

They are propagated either by ſeed in a hot-bed in ſpring, or by cuttings in pots of dry light earth, plunged in the bark-bed in the ſtove, or any other hot-bed, moving the plants afterwards to the ſtove, and allow them ſupport.

BASKETS. For the uſe of gardeners, different ſorts of Baſkets are neceſſary for gathering the different products, and other uſes.

As for inſtance, that for the purpoſe of gathering all ſorts of ſallad herbs for family uſe, flat, ſhallow, chip or oſier Baſkets, without any handle, are the moſt convenient, which are in dimenſion, from about ten or twelve, to eighteen inches diameter, and two or three deep, which will commodiouſly hold, ſeparate, all the different herbs neceſſary to compoſe a ſallad for a family, and which are alſo uſeful for gathering many other ſorts of ſmall herbs. The Baſket-makers make vaſt numbers of them for the above uſes, which, about London, they ſell from one to two or three ſhillings per dozen.

For the purpoſe of gathering peas, beans, cabbage, carrots, and other crops required in any conſiderable quantity, there ſhould be ſtrong, deep, oſier Baſkets, of different dimenſions, ſomewhat of the form of a water-pail, and from about a peck to a buſhel ſize, with two ſtrong ſide-handles at top.

Baſkets of the above dimenſions are alſo very uſeful to uſe in weeding, both in the kitchen and pleaſure ground.

But in ſome places they make their garden Baſkets round, or of a half-globular form, with an arched or bow-handle croſs-ways at top, and are very uſeful for light work.

The kitchen-gardeners about London, for the purpoſe of carrying their ware to market, have ſtrong oſier Baſkets of different ſizes and ſhapes, for which they have different terms, as boats, junks, maunds, ſieves, &c. The boats are large flat Baſkets two or three feet broad, and eight or ten inches deep, with two handles at the rim, uſed chiefly to put up ſuch goods that cannot bear hard, or cloſe packing, ſuch as lettuce, celery, cauliflowers, ſmall ſallad-herbs, &c. alſo many ſorts of bunched eſculents, as bunches of young carrots, onions, leeks, fans of horſe-radiſh, ſticks of parſneps, hands of radiſhes, bunches of young coleworts, and ſuch like. Junks are from about half a buſhel to a buſhel ſize, flat-bottom, eight or ten inches deep, wideſt at top, where are four ſtrong handles, much uſed for packing kidney beans, which, with the help of large cabbage-leaves, they generally heap conſiderably more at top than there is within the Baſket. Maunds are upright narrow Baſkets about two feet deep, wider at top than bottom, having two handles, and uſually open round the middle of the ſides, and are uſed wherein to pack ſpinach, parſley, ſprouts, and other ſmall culinary herbs. Sieves are flat-bottomed, upright-ſided Baſkets, about a foot deep, without handles, and from about a peck to a buſhel meaſure in dimenſions, being equally as wide at bottom as the top, and are uſed for packing various ſmall plants; likewiſe fruit, particularly gooſeberries, currants, cherries, plums, &c. which differ-

rent kinds of Baſkets, though moderately cheap, ſtand the market-gardeners in an annual expence of from ten to twenty or thirty pounds, or more, according to their extent of ground.

Fruit-baſkets for domeſtic uſe, ſhould be of different ſorts; that for gathering ſmall fruit for table, ſuch as ſtrawberries, raſpberries, mulberries, gooſeberries, currants, cherries, &c. there ſhould be ſeveral ſmall, round, ſhallow, white Baſkets, of two or three different ſizes, holding in meaſure from about a quart to half a gallon, &c. from about ſix to ten or twelve inches diameter, and the rims not more than two or three deep, wider at top than bottom; ſo that every ſort of theſe ſmall fruit may be gathered in a ſeparate Baſket, and in that manner carried in to be put up in the deſert. For the larger kinds of fruits, ſuch as apricots, peaches, nectarines, plums, figs, pears, &c. it is proper to be furniſhed alſo with different-ſized, ſmall, ſhallow Baſkets, as above, at leaſt for the purpoſe of ſending in the fruit for the deſert, each ſort in its ſeparate Baſket, which ſhould be previouſly lined at bottom, and round the ſides and edges, thinly with vine leaves, the more effectually to preſerve the beauty of the fruit, and ſet it off to the beſt advantage, eſpecially if ſome are alſo thinly diſpoſed between the larger ſorts, as apricots, peaches, &c.

Pottle baſkets are the moſt convenient for ſending quantities of ſtrawberries, raſpberries, and mulberries, choicer ſorts of early cherries, and the moſt delicate ſorts of ſmall plums, to market, or to any diſtance; theſe are very ſmall, upright, chip Baſkets, holding about a quart, being ten or twelve inches deep, very narrow at bottom, and not more than four or five inches wide at top, where there is a croſs handle The London gardeners uſe vaſt quantities of them, buy them at ninepence or a ſhilling per dozen, which when filled with fruit, they pack many together in a large Boat-baſket, ſo ſend them to market on men's heads, or otherwiſe.

Sieve-baſkets, already mentioned, are the moſt uſeful for ſending large quantities of gooſeberries, currants, common cherries, grapes, plums, and other ſtone fruit, and ſoft pears, to market, which ſhould never be filled higher than the brim, placing a little fern, or ſhort hay, at top, ſo that, as being of an equal width at bottom and top, may, if requiſite, place one upon another, without preſſing upon the fruit. The cherry farmers in Kent and Hertfordſhire, &c. uſe all theſe ſort of Baſkets for ſending their cherries, and other ſoft fruit, to market.

Baſkets are alſo uſeful for packing many ſorts of plants in pots, when intended to be ſent in a growing ſtate to any great diſtance, for which uſe the Baſkets are prepared in width and depth, in proportion to that of the pot containing the plant; and if the plant hath a full head, the edge of the baſket is cloſely ſet round with long oſier, or willow rods; ſo when the plant is placed in the baſket, its head is tyed together neatly in two or three different parts; then the rods are gathered together at top, ſo as to ſurround and defend the head of the plant, which, when faſtened, will have a pyramidal form, and if it is cold weather, and the plants are of the tender kinds, mats ſhould alſo be neatly ſewed round the whole.

Large Baſkets, about three feet deep, and two and half diameter, are uſeful in pleaſure-grounds, for carrying off the mowing of ſhort graſs, leaves, &c. placing the baſket on a water-barrow, which Baſket will contain three times as much as the body of a common wheel-barrow; ſo that the work is done with more expedition, and with leſs wheeling backward and forward upon the graſs and walks.

In many places the gardeners make their own Baſkets, particularly in North-Britain, where, in time of hard froſts, when nothing can be done abroad, the men are occaſionally employed in making Baſkets for the enſuing year's ſervice, at which ſome are very dextrous; but they commonly make them all of a half globular form, with a bow handle croſs-ways at top, as before deſcribed.

For the principal materials for making Baſkets, ſee SALIX.

BASONS, or Reſervoirs of Water, for uſe and ornament in gardens.

For uſeful purpoſes, Baſons of water in gardens are eſſentially neceſſary for watering plants in ſummer, particularly ſuch that are obliged to be planted out in time of drought; alſo for watering beds of young ſeedlings of any ſort in dry hot weather, plants in hot-beds under glaſſes, and all ſorts of plants in pots; and that water expoſed to the ſun and air in Baſons, &c. is conſiderably more ſalutary for the growth of all vegetables, than raw ſharp water, drawn immediately out of wells: but ſometimes there are natural ponds, reſervoirs, or other waters, in the neighbourhood of gardens, ſo conveniently ſituated for watering, as to render the expence of making

a Baſon, merely for that purpoſe, unneceſſary.

For ornament, regular Baſons of water were in great eſteem in formal deſigns of gardens, and were commonly ſituated in large opens, or centres, at the termination or meeting of ſeveral walks; they were often ſo contrived, as to have playing fountains, or jets d'eau, as the French term them, in the middle, with Neptune and his train, and other devices; but the regular figure of a Baſon, &c. is now thought too formal to be admitted in our preſent deſigns in imitation of nature: this, however, is according to the fancy of the owner or planner of the deſign, ſince the form and dimenſion may be varied at pleaſure. The figure was commonly either circular, oval, octagonal, or ſquare, which, when of moderate dimenſions, were called Baſons, but if large, were termed pieces of water; but a Baſon might be formed according to nature, in any well-deſigned irregular figure, ſo as to have a deſirable effect.

One great article in making Baſons, or any pieces of water, is to conſider whether a proper ſupply of water is to be obtained at all times of the year.

Another thing is the means of making them hold water completely at all ſeaſons.

This is done the moſt effectually by laying the bottom and ſides of the cavity thereof with ſtrong clay, twelve, fifteen, or eighteen inches thick, according to the quality of the natural ſoil; for the more the ſoil inclines to a looſe or ſandy texture, the greater thickneſs of clay muſt be allowed; but where the ſoil is naturally loamy or clayey, there will be little difficulty in making it hold water with a moderate thickneſs of additional clay.

In default of clay for the above purpoſe, chalk is ſometimes uſed in countries where it abounds, firſt forming it into a powder, then forming into a ſort of mortar, and with this the bottom and ſide walls are formed, beating and ramming it hard, obſerving the thickneſs as above.

Some alſo, inſtead of clay, work the bottom and ſides a foot thick with maſonry of brick or ſmall ſtones laid in terraſs, and plaiſter it over with two or three inches thickneſs of cement, which is two thirds of powdered tile to one of lime, beating it well with as little water as poſſible, into a ſtrong mortar, and after this is laid on, rub it over with oil or bullock's blood, and it hardens under water like ſtone.

The depth of Baſons, or any ornamental piece of water, need not be more than three feet, though ſome are conſiderably deeper; but four feet at moſt is depth enough, even when intended to have a boat thereon, or to keep fiſh in for breeding. The ſides of the cavity of the Baſon ſhould be formed with a gradual ſlope, from the top of the circumference to the intended depth, and the whole laid with clay, to render it water-tight, as before obſerved, and a few inches of gravel over that, to preſerve it, and render the water clear; and the ſurrounding ſurface of ground ſhould be laid with graſs from the edge of the water to ſome conſiderable diſtance each way, though in the old deſigns, perpendicular walls of maſonry laid in terraſs, were often formed round the ſides of the cavity, with a ſtone coping at top, correſponding with the general ſurface.

No high banks, or ſtiff ſlopes, ſhould be raiſed as boundaries to a Baſon, or any piece of water intended for ornament, to obſtruct the diſtant proſpect thereof; and if ſo that the water will unavoidably lie low, it is proper to ſlope off the ground gradually from ſome diſtance on every ſide to the intended ſurface of water, ſo as the ſuperficies of the circumference may more apparently correſpond with the general ſurrounding ſurface; for the ſlope to the water, if neceſſary to have any, ſhould be eaſy and natural, that the whole ſurface of water may appear as conſpicuous as poſſible at ſome diſtance, and the whole ſo contrived, that the water may always appear nearly as high as the ſuperficies of the margin of the Baſon.

The ſituation for ornamental Baſons, &c. ſhould be in ſome conſpicuous part, as far as may be conſiſtent with the means of having it properly ſupplied with water at all ſeaſons, eſpecially in ſummer, when it is the moſt deſireable both for uſe and ornament; and where a large work is intended, we ſhould alſo contrive it in the moſt eligible part, where as little digging as poſſible is neceſſary to form the cavity.

As to the dimenſions or ſize, that, if deſigned merely for the uſe of watering plants, from ten to fifteen or twenty feet diameter may be ſufficient; but when required for ornament, it may be any ſize or form, in proportion to the extent and form of the garden, or according to the ſupply of water that can be eaſily obtained, or the nature of the ſoil for holding the water; for where water is ſcarce, or that the ſoil is looſe and ſandy,

nothing

nothing very extenſive ſhould be attempted, as the bringing clay from a diſtance to lay a large Baſon fifteen or eighteen inches thick, as muſt be the caſe in light ſandy ground, would be attended with a conſiderable expence; and if, after all, water was not to be had in ſufficient quantity to keep the Baſon always full, how great would be the diſappointment? But where water is copious in the neighbourhood, either in an adjacent river, brook, or running ſpring, ſo ſituated that a ſufficiency can be readily conveyed at a moderate expence to the part of the ground required, a Baſon of a more capacious dimenſion may be undertaken; and if, with the above circumſtance of plenty of water, there is a natural loamy or clayey ſoil of proper depth, they are particular advantages, and in which caſes, Baſons of conſiderable extent are ſometimes eaſily formed with very little artificial claying, and ſome without any, where there is a good natural depth of clay, and a large ſupply of water: however, in looſe, hollow, ſandy, or any light ground, a good coat of clay muſt be allowed all over the bottom and ſides.

In ſetting out the dimenſions of the Baſon, obſerve, that where a full coat of clay is neceſſary, it muſt be ſtaked out three feet ſix inches, at leaſt, wider than its intended width, to allow for a fifteen inch wall of clay on each ſide, and five or ſix inches of gravel over the clay; it ſhould alſo be twenty inches, or two feet deeper than you deſign the depth of water, becauſe the bottom ought to be clayed fifteen or eighteen inches thick, and five or ſix of gravel.

Particular care ſhould be obſerved to ſtake the ſuperficies of the circumference perfectly level, that the water may ſhow regular diſtance every way from the margin. The manner of taking the level is as directed under the articles LEVELLING and WATER.

In digging out the cavity of the Baſon, begin towards the middle, and excavate the earth to the intended depth, as above, then work off the ſides regularly with a moderate ſlope from the edge of the circumference to the bottom of the Baſon.

When the cavity of the Baſon is formed, let it be well rammed and ſmoothed, then the clay is to be brought in, which ſhould have been previouſly well wrought over and trod; ſee CLAY; and begin laying the bottom in the middle, being careful that no ſtones, ſticks, or ſuch materials, be mixed therewith, to occaſion fiſſures to let off the water; ſpread it regularly, a little at a time, and tread it with men's naked feet, caſting water thereon frequently, ramming it alſo from time to time with wooden rammers, obſerving, if it is looſe ground, lay it fifteen or eighteen inches thick, and ſee that every part be well kneaded, that there be not the leaſt vacancy, for the water will eſcape at the ſmalleſt cranny, and occaſion great trouble hereafter. During the work, if the weather is dry, cover the clay, as you lay it, with mats or moiſt litter, to prevent its cracking, continuing the claying regularly each way from the bottom to the top of the circumference of the Baſon; and as ſoon as the whole is clayed, cover it immediately with a ſtratum of coarſe gravel four or five inches thick, which ſecures the clay, and renders the water always clear; and when thus far finiſhed, let the water in as ſoon as poſſible. Then proceed to finiſh the ſuperficies of the circumference, and lay it all round with turf from the water-edge to ſome conſiderable diſtance every way, as the ſituation ſhall admit, obſerving to lay it as far down on every ſide as the water will apparently ſtand, but not ſo as to form any ſlope, diſtinct from that of the immediate ſurrounding ſuperficies; for if any at all is neceſſary, it ſhould be contrived in one regular ſlope, which is the more agreeable to character, as the ſurface of water will more apparently correſpond with the circumjacent ſurface of the ground, and appear the more conſpicuous at a diſtance; ſo that when the ſurface of the water lies unavoidably much lower than the general ſurface, the ground on every ſide ſhould be ſloped off gradually to ſome conſiderable diſtance, as before hinted, that the deſcent to the water may be as eaſy and natural as poſſible, ſo as to admit of walking with pleaſure upon any part thereof.

Sometimes, in regular pieces of water, one or more artificial ſwells, in imitation of nature, are artfully diſpoſed in particular parts near the ſide, ſo as to have a characteriſtic appearance.

BASS, among gardeners, is pieces of the threads or ſtrings of garden baſs mats, extremely uſeful as ligaments in the culture of numbers of plants, and the moſt cheap and ready bandage for the uſe of gardeners.

As for inſtance, it is the beſt bandage that can be uſed for binding grafts and buds; alſo for the tying up the ſtalks or ſtems of moſt ſorts of flowering plants, and which, if freſh, will

will endure a year; likewiſe is very uſeful in the kitchen garden for many purpoſes, ſuch as tying up the leaves of early cabbages, lettuce, endive, &c. to whiten and promote their heading; alſo for bunching up various ſorts of pot and medical herbs for winter ſervice, and for many other uſes.

The Baſs for all theſe purpoſes ſhould be quite freſh, not taken from ſuch old mats as have been occaſionally uſed in the garden; and that where there is much tying, it is eligible to allot a mat or two entirely for that purpoſe, keeping it in the dry, and not drawing the Baſs, as is often practiſed, from the mats that are deſigned for other uſes, which ſoon ſpoils them.

When it is wanted for tying, it ſhould be drawn out regularly, and cut into equal lengths; and to render it more pliable and tough, ſhould be dipped in water, then the gardener ſhould tuck it in his apron-ſtring, where it will be ready for uſe.

BASTERIA, All-ſpice. See CALYCANTHUS.

BAUHINIA, Mountain Ebony.

This genus comprehends ſeven or eight ſpecies of tender exotic ſhrubs and trees, producing pentapetalous flowers in ſpikes, having ten ſtamina, and a declinated ſtyle.

They are rare in England; the following are cultivated in ſome of our ſtoves.

[1]BAUHINIA *Aculeata*.

*Prickly Bauhinia, or Indian Savin.*] Bauhinia with a prickly ſtem, riſing fifteen feet high, having irregular branches, roundiſh emarginate leaves, emitting a balſamic odour like the ſavin-tree, and ſpikes of yellow flowers.

[2]BAUHINIA *Tomentoſa*.

*Tomentoſe Bauhinia.*] Bauhinia with a ſmooth ſtem and branches, growing fifteen or eighteen feet high, heart-ſhaped tomentoſe leaves, having two ſemi-orbicular lobes, and long ſpikes of yellow flowers.

They are propagated by ſeeds from abroad, aſſiſted by a hot-bed, or the bark-bed in the ſtove, where the plants muſt always remain.

BEDS are ſmall compartments of ground, of three or four feet breadth, very neceſſary in the culture of many ſorts of plants.

In kitchen-gardens, it is eligible to ſow and prick out many ſorts of ſmall plants in Beds, having narrow alleys between, for the greater convenience of weeding, watering, gathering, &c. without trampling on the crops; as, for example, the ground intended for aſparagus and ſtrawberries ſhould be divided into four feet wide Beds, with eighteen inches, or two feet alleys between; onions are alſo cultivated to the beſt advantage in four feet wide Beds, having ten or twelve inch alleys; the different ſorts of lettuce and endive ſhould alſo be ſown and tranſplanted into ſeparate Beds; alſo early radiſhes, when intended to cover them occaſionally. All ſorts of plants that are particularly intended for tranſplantation, ſhould always be ſown in beds or narrow borders, ſo as to admit of ſtanding to clean, water, and draw the plants, without treading upon them; alſo, for the ſame reaſon, all plants neceſſary to be pricked out previous to their final tranſplanting, ſhould alſo be pricked in Beds, ſuch as celery, cabbage, cauliflower, broccoli, &c. aromatic and medical herbs of all ſorts ſhould alſo, for the general part, be diſpoſed in Beds with twelve or fifteen inch alleys between, particularly mint, thyme, ſavory, marjoram, ſage, hyſſop, baum, penny-royal, tanſey, tarragon, feverfew, rue, &c. which method of bedding all the ſorts of plants above hinted, is not only more commodious for doing the neceſſary work without prejudicing the plants, but alſo has an air of uniformity, which is ever to be obſerved in a kitchen garden.

The proper dimenſions of Beds in this diſtrict, is four feet, or four and a half in width, the length at pleaſure, with intervening ſhallow alleys, nine, twelve, or fifteen inches wide, ſo that a perſon in the alleys may eaſily reach half acroſs the Bed, to do the neceſſary work to the plants, &c. without trampling them, or treading the ground hard.

In flower-gardens, when deſigned ſeparately from the general pleaſure ground, ſhould be wholly divided into regular parallel Beds, of three or four feet width, with eighteen inch, or two feet alleys, eſpecially when intended chiefly for the curious ſorts of bulbous rooted flowers, ſuch as tulips, hyacinths, &c. alſo for ranunculas, anemones, and other choice ſorts, that, by being depoſited together in Beds, they can be occaſionally covered in winter, and the flowers ſcreened from the ſcorching ſun in ſummer. Theſe Beds ſhould be neatly edged with box. See BUXUS and EDGINGS.

The Beds of a regular flower-garden may alſo be laid out parterre faſhion in the Chineſe taſte. See PARTERRE.

A flower ſeminary, or nurſery for raiſing all ſorts of flowers from ſeeds, ſlips, cuttings, parting-roots, &c. ſhould alſo be divided into three or four feet wide Beds.

In

In nurſeries for trees, the ground intended for the reception of ſeeds and cuttings of all ſorts of hardy trees and ſhrubs, ſhould alſo be divided into three or four feet Beds, with twelve or fifteen inch alleys between, for the reaſons above-mentioned.

Beds ſhould not in general be raiſed but very little higher than the alleys, unleſs in caſes of too copious moiſture; but otherwiſe, the ſurface of Beds ſhould not be more than two or three inches, at moſt, higher than the level of the alley; for, when raiſed conſiderably, the alleys aſſume the appearance of trenches, and have a diſagreeable look.

BELLIS, that beautiful little perennial the Daiſy.

The garden Daiſy, in all its forms and colours, are varieties only of one ſpecies, and that the common white field Daiſy that adorns the meadows and paſture grounds in moſt parts of Europe, is ſuppoſed to be the parent of them all.

Claſs and order, *Syngeneſia Polygamia Superflua.*

*Characters.*] Compound radiated flower. CALIX, a double ſeries of ſmall equal leaves. COROLLA, numerous ſmall, tubular, hermaphrodite florets compoſe the diſc, and flat female florets the radius, and a ſingle naked ſeed under each floret. See COMPOSITUS *Flos.*

But in the full double flowers, the radius, or female florets, are encreaſed to the very centre, and form the doubleneſs. See PLENUS *Flos.*

The ſpecies is,

BELLIS *Perennis Hortenſis.*

*Perennial Garden Daiſy.*] Bellis with a fibrous perennial root, crowned by numerous ſmall, oval, evergreen leaves, in a large tuft cloſe to the ground; and amongſt them riſe many naked flower-ſtalks, four or five inches high, each ſupporting one flower.

*Varieties of this are*] Common garden Daiſy with double white flowers—with double red flowers—with double white and red ſtriped flowers——with variegated flowers——double ſcarlet flowers—double pyed flowers—double quilled or fiſtular flowers—double white cock's-comb-ſhaped flowers——double red cock's-comb-ſhaped flowers—double ſpeckled flowers—Proliferous, or Hen and Chickens Daiſy, the moſt ſingularly curious of all, it being a large double flower, ſending out many ſmall ones immediately from its ſides all around, each ſupported on a ſhort foot-ſtalk, the whole regularly ſurrounding their common parent, appearing very ornamental.

All theſe varieties flower abundantly in April, May, and June, and have an exceeding pretty effect, when properly diſpoſed in the fronts of borders in aſſemblage with perennials of ſimilar growth. See PERENNIAL PLANTS.

They are extremely hardy, and proſper in almoſt any ſituation and ſoil.

With regard to their diſpoſition, ſome plant them to form edgings, but theſe ſoon become irregular, in which order of arrangement, however, the flowers are the moſt conſpicuous, though, for the ſake of diverſity, I ſhould alſo adviſe diſpoſing many of them in different parts of the borders, towards the front, to form round patches or tufts a yard or two diſtance, planting the different varieties alternately, to effect the greater variegation.

The propagation of all the varieties is by dividing or ſlipping the plants in autumn or ſpring, and the ſmalleſt ſlip having a fibre, will readily grow, and in one ſeaſon encreaſe to a large tuft; if, however, they are intended to make as great a ſhow of bloom as poſſible, they ſhould not be divided too ſmall, and the ſlips may be planted at once where they are to remain.

As theſe plants encreaſe conſiderably into bunches, they ſhould be tranſplanted and ſlipped every year, or at leaſt every ſecond autumn.

This is alſo neceſſary to preſerve the double ſtate of the flowers, as, if permitted to remain long unremoved and ſlipped, they become ſmall and ſingle like the common ſort.

The gardeners about London, who raiſe vaſt quantities to ſupply the markets in ſpring, always ſlip their ſtore plants annually in autumn, in September or October, and plant them together in beds or borders, in rows ſix inches diſtance, planting ſome alſo in warm ſunny borders, to facilitate an early bloom, for they always carry the plants to market when in flower, and the ſooner this is effected in ſpring, the greater price they fetch.

At each time of ſlipping, always encreaſe from the largeſt and fulleſt doubles; and thoſe that diſcover any ſigns of degeneracy to ſingles, caſt entirely out of the garden.

BERBERIS, the Barberry-ſhrub, or Pipperidge-buſh.

This genus comprehends hardy deciduous ſhrubs, having ſimple oval leaves, and ſmall hexapetalous flowers, moſtly in ſmall bunches.

Claſs

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX, ſix concave coloured leaves, alternately ſmaller and larger. COROLLA, ſix ſmall, oval, concave petals, and two coloured nectariums attached to the baſe of each petal. STAMINA, ſix erect, compreſſed, blunt filaments, and two antheræ attached to their apex. PISTILLUM, a long cylindric germen, no ſtyle, but a broad, orbicular, bordered ſtigma. PERICARPIUM, a cylindric, blunt, umbelicated berry, of one cell, containing two ſeeds.

The ſpecies are,

[1]BERBERIS *Vulgaris.*

*Common Barberry.*] Barberry with ſhrubby woody ſtems and branches, growing eight or ten feet high, armed with thorns by threes; oval ſlightly-ſerrated leaves, placed alternate; and yellow flowers, in numerous ſmall long cluſters from the ſides of the branches, ſucceeded by cluſters of ſmall, bright, red berries, in autumn.

*Varieties of this are*] Common Barberry with red fruit, having ſtoney ſeeds—with red ſtoneleſs fruit—with white fruit—with black ſweetiſh fruit.

The root of all the varieties is yellow; alſo the inner bark of the ſtem and branches.

[2]BERBERIS *Cretica.*

*Cretan Box-leaved Barberry.*] Berberis with many ſhrubby ſtalks three or four feet high, armed with thorns at every joint, ſmall oval leaves, and ſlender foot-ſtalks, each having one flower, but no fruit in England.

The firſt ſpecies, *Berberis Vulgaris*, is the moſt commonly cultivated in the Engliſh gardens, and the red fruited varieties moſt of all; it grows wild in many of our woods and hedges, but has been long admitted an inhabitant of gardens, both as an ornamental ſhrub, and for the ſake of its red fruit for domeſtic uſes, which, growing in numerous little cluſters, have a very ornamental appearance in autumn, and when fully ripe, are a curious and very wholſome pickle; for which uſe, the ſtoneleſs red ſort is in moſt eſteem; the bunches of red fruit are alſo in much requeſt for garniſh to diſhes, and where numbers of the ſhrubs are cultivated, the fruit afford a good repaſt for birds.

They flower in May, and the red ſorts ripen fruit abundantly in September.

They are excellent furniture for wilderneſs or wood-works, or any of the large ſhrubbery clumps, in aſſemblage with common deciduous ſhrubs, and all the culture they require is, to reduce with a knife any rambling ſhoots. See SHRUBBERY.

But to have fruit as large and fine as poſſible, ſome plants may be diſpoſed ſingly, trained with a ſingle ſtem four feet high, then permitted to branch out to form a head, and take its natural growth, only cutting out luxuriant ſhoots and ramblers.

Their propagation may be effected by ſuckers ariſing annually from the root.

Likewiſe abundantly by layers in the common way, any time from October till March, which will be rooted and fit to tranſplant the following autumn; cuttings of the young ſhoots planted in autumn, will alſo many of them ſtrike.

They may likewiſe be raiſed plentifully from ſeed, in a bed of common earth, in autumn, though the plants will probably not appear until the ſecond ſpring.

BETA, the Beet.

This genus furniſhes ſeveral varieties of uſeful culinary herbs, and eſculent roots, of the kitchen-garden.

Claſs and order, *Pentandria Digynia.*

*Characters.*] CALIX, a five-leaved permanent cup. COROLLA, none; five ſtamina; a germen under the receptacle, and two ſtyles, ſucceeded by a unilocular capſule, having one ſeed ſurrounded by the calix.

There are two or three ſpecies, one of which grows wild on the ſea ſhores, and is ſeldom admitted in gardens.

The garden kinds are,

[1]BETA *Cicla.*

*The Common Culinary Beet*] Beta with a ſmall, oblong, white root, producing from its crown many large, oblong, ſucculent leaves, on broad foot-ſtalks; anderect branching ſeed-ſtems and ſtems two or three feet high, garniſhed with cloſe-ſitting leaves, and long ſpikes of greeniſh flowers.

*Varieties of this are*] Common green-leaved Beet—white-leaved Beet—Chard, or great white Swiſs Beet, having very broad leaves, with thick foot ſtalks and ribs.

Theſe varieties often vary from one to the other, that the ſeed of one frequently producing ſome of each ſort, though, by care in ſaving the ſeed, the difference may be continued.

[2]BETA *Rubra.*

*The Red Beet.*] Beta with a large, red, eatable root, crowned by many large, ſucculent, dark-purple leaves; and when it ſhoots, ſends

ſends up erect ſtalks and branches, terminated by long ſpikes of flowers.

*Varieties of this are* ] Common red Beet with a large, longiſh, dark-red root—turnep-rooted red Beet—with a red root and green leaves—with a yellow root.

The firſt of theſe four varieties is to be preferred for general culture.

*Culture of the Common Sort and Varieties.*

The firſt ſort, Common Beet, and varieties, are choice culinary herbs, whoſe property reſides in their large ſucculent leaves, which are excellent for ſoups, &c. alſo to boil and eat like ſpinach; and the Chard Beet is in much eſteem alſo, for the ſtalks and ribs of its large leaves, which being diveſted of the leafy part and peeled, are great improvers of ſoup, alſo for ſtewing, and to be dreſſed and eaten like aſparagus, and the leaves themſelves are fine pot herbs, as above, for all of which uſes the ſeveral varieties of this ſpecies may be obtained almoſt the year round; for as often as the large outer leaves are gathered, the root continues ſending up a freſh ſupply from the centre, not only in ſummer, but alſo in autumn, winter, and ſpring, in open weather.

All the varieties of this ſort are propagated by ſeed ſown annually in March or April, in the places where the plants are to remain.

They ſucceed in any common ſoil of the kitchen-garden, allowing each ſort a ſeparate plat or bed. Let the ground be dug one ſpade deep in the uſual way; the ſeed may then either be ſown broad-caſt on the ſurface, and raked in; or, as it is a large ſeed, ſhallow drills may be drawn ſix inches diſtance for the common green and white varieties, but almoſt double that for the Chard Beet, ſowing the ſeeds therein thinly, and rake the earth over them about an inch deep, and trim the ſurface ſmooth.

The plants will come up in about a month; when theſe have leaves an inch or two broad, they ſhould be hoed to thin them and deſtroy weeds, cutting out the common green and white ſorts to about ſix inches diſtance; but the Chard Beet ſhould be allowed ten or twelve inches room every way, that their large ſucculent leaves may have full ſcope to ſpread.

They will be in perfection for uſe in June and July, and continue till next ſpring, obſerving, when you gather them, always to take the largeſt outſide leaves; the others will come in for uſe in their turn, and an abundant ſucceſſive ſupply will riſe duly in the centre from the root.

*Culture of the Red Sort.*

The ſecond ſort, *Beta Rubra*, is highly valued for its large red root, which in the common variety often grow twelve or fifteen inches long, and three or four inches thick, or more, upward; and thoſe that are of the largeſt growth, and darkeſt red colour, are the moſt valuable: theſe roots being tender, ſweet, and palatable, are boiled, ſliced, and eaten cold, &c. are alſo ſliced and ſcraped in ſallads, both as an eatable ingredient, and by way of garniſh; ſlices of the root are alſo in requeſt as garniſh to diſhes, and they are alſo uſed as a pickle.

Theſe roots are in perfection from the end of Auguſt until March or April, when they will ſhoot, and become ſticky.

This ſort is raiſed from ſeed annually in March or April, in the place where the plants are to remain, being careful to procure that of the beſt dark red ſort.

It ſhould be allowed a light, rich, deep ſoil, in an open expoſure.

The market-gardeners often ſow this ſort thinly among their crops of onions, carrots, &c. that are to be drawn off while young; ſo that when theſe are gone, the Beets commence a full crop.

I ſhould however adviſe to ſow the principal crop ſeparate, which, in the end, will be found to be the beſt culture. Let the ground be dug one good ſpade deep at leaſt, and well broken, and ſow the ſeed directly, which may either be ſown broad-caſt on the ſurface, ſo tread and rake it in, or, as obſerved of the firſt ſort, as the ſeed being large, that in order to bury it more regularly, it may be ſown in drills drawn an inch deep, and ten or twelve diſtance; or you may dot or prick it in, as often practiſed, with a blunt dibber, in lines the above diſtance, making the holes an inch deep, and eight or ten aſunder, at leaſt, dropping two or three ſeeds in each hole, though only one good plant muſt be left in each place. In May or June, when the plants of either method of ſowing have leaves an inch broad, they will require thining and cleaning from weeds. Chuſe a dry day, and with an hoe cut up all weeds, and ſet out the plants ten or twelve inches diſtance, leaving no where two or more together, repeating the work occaſionally to kill weeds till the plants cover the ground.

Some of the roots will be fit to take up for uſe about the end of Auguſt, though they will not attain perfection until October.

In November a quantity of roots ſhould be taken up, their tops trimmed off not too cloſe, and then laid in ſand or dry earth under ſhelter, to be ready for winter ſervice.

*Of ſaving Seed from both Species.*

To ſave ſeed of all the varieties, either mark ſome of the beſt plants in ſpring to be left to run up, or may be tranſplanted in February or March into a convenient place, to have ſhelter from winds; they will ſhoot up ſtalks in May; in June ſupport them with ſtakes, and the ſeed will ripen in September.

BETONICA, Betony.

The plants are herbaceous fibrous-rooted perennials, having ſimple leaves, and annual ſtalks from one to two feet high, terminated by ſpikes of ſmall ringent flowers; eſteemed, ſome as medical plants, and ſome for variety in gardens.

Claſs and order, *Didynamia Gymnoſpermia.*

*Characters.*] CALIX is monophyllous, tubular, five-parted, and permanent. COROLLA is ringent, with a cylindric incurved tube, the upper-lip roundiſh and entire, the lower one three-parted, the middle part broad and emarginated. STAMINA, two long and two ſhort filaments, and roundiſh antheræ. PISTILLUM, a four-parted germen, awl-ſhaped ſtyle, and bifid ſtigma. PERICARPIUM none, four naked ſeeds lodged in the calix.

The ſpecies are,

[1]BETONICA *Officinalis.*

*Common Officinal Wood Betony.*] Betonica with many oblong indented leaves on long foot-ſtalks from the root, and ſquare ſtalks a foot and half high, terminated by interrupted ſpikes of flowers.

*Varieties.*] Common Betony with purple flowers——with red flowers——with white flowers.

This ſort and varieties is a wild plant of our woods, much valued for its medical properties.

[2]BETONICA *Orientalis.*

*Oriental Betony*] Betonica with long, narrow, hairy, indented leaves, on long foot-ſtalks from the root, and ſquare leafy ſtalks a foot and half high, terminated by a large entire ſpike of purple flowers.

[3]BETONICA *Danica.*

*Large Daniſh Betony.*] Betonica with broad, heart-ſhaped, radical leaves; large upright ſtalks, ornamented with ſpear-ſhaped obtuſe leaves, and terminated by ſhort thick ſpikes of purple or white flowers.

All theſe are hardy plants, and will thrive in any ſituation.

They are propagated by ſeed and by parting the roots. Sow the ſeed in the ſpring, and the roots may be parted or tranſplanted either in the ſpring or autumn.

BETULA, the Birch-tree; comprehending alſo the *Alnus*, or Alder-tree.

This genus comprehends ſeveral ſpecies of hardy deciduous foreſt-trees, uſeful for purpoſes in gardening, and as underwood and timber-trees for many œconomical uſes.

Claſs and order, *Monoecia Tetrandria.*

The flowers are produced in a cylindrical amentum or catkin, with male and female flowers on ſeparate catkins, at a diſtance on the ſame tree; the male florets have four ſtamina, and the females two ſtyles, ſucceeded by ſingle ſeeds lodged in the ſcales of the amentum.

The ſpecies are,

[1]BETULA *Alba.*

*The White, or Common Engliſh Birch.*] Betula with an erect trunk covered with a white bark, riſing twenty or thirty feet high, dividing into many moderate branches, adorned with ſmall, oval, ſerrated leaves, ending in points.

[2]BETULA *Nigra.*

*Black Virginia Birch.*] Betula with a large upright trunk, and ſpreading ſpotted branches, growing fifty or ſixty feet high, garniſhed with larger, rhomboid-oval, doubly-ſerrated, pointed leaves, on long foot-ſtalks.

*Varieties.*] Broad-leaved Virginia Birch—Poplar-leaved Virginia Birch—Paper-Birch.

[3]BETULA *Lenta.*

*Canada Birch.*] Betula with an upright trunk and ſpreading branches, growing ſixty feet high; large, heart-ſhaped, oblong, pointed, ſerrated leaves.

*Varieties.*] Duſky Canada Birch—White-paper Canada Birch—Poplar-leaved Canada Birch.

[4]BETULA *Nana.*

*Dwarf Alpine Birch.*] Betula with a ſhrubby branching ſtem two or three feet high, garniſhed with round crenated-edged leaves.

The BETULA ALNUS, or Alder-tree, is,

[5]BETULA *Alnus.*

*Alnus, or Alder-tree.*] Betula with an upright ſtem, having purpliſh bark, riſing thirty or forty feet in height, dividing into many purpliſh erect-growing branches, adorned with

with large, round, glutinous leaves, of a deep green colour.

*Varieties.*] Common round leaved Engliſh Alder as above—Long-leaved American Alder—White Alder—Hoary-leaved Alder—Dwarf Alder.

All theſe ſpecies of *Betula* are extremely hardy, and will proſper upon almoſt any ſoil and expoſure, either in large pleaſure-grounds, parks, fields, &c.

For purpoſes in gardening, they, having ſtrait ſmooth ſtems, may be introduced for ornament and variety in extenſive grounds; their foliage will form an agreeable diverſity in aſſemblage with other deciduous trees, but their flowers poſſeſs little beauty; they have a good effect in large wilderneſs and wood-works, and in ornamental plantations on the boundaries of parks and conſiderable lawns; alſo in internal clumps in parks, and ſome planted ſingly as ſtandards in large opens.

The *Betula Alba*, or Common Birch, grows naturally in great plenty in many parts of Britain, proſpers in any ſoil, wet or dry, boggy, ſtony, or ſandy barren land, often ſowing itſelf, and comes up abundantly in ſuch places where hardly any other tree will grow; and in ſuch ground it may be cultivated to advantage, both as a foreſt-tree for its timber, and as coppice or underwood, to fall every ſeven or eight years for poles, &c.

The timber of this tree when old is eſteemed by the wheel-wrights, and turner's value it for many purpoſes; its lopping is excellent fuel, and the bruſh-wood make the beſt of brooms. See BROOMS.

The bark of theſe trees being of ſuch durable nature, that the Swedes cover their houſes with it.

Before the invention of writing-paper, the inner fine bark of this tree was often uſed for that purpoſe; hence ſome ſorts are called Paper-Birch.

A wholeſome wine is made of the juice or ſap of this tree, procured in March while the ſap is in motion, by boring holes in the body of large trees, and putting in faucets or taps of ſmall elder-pipes, to conduct the liquor into bottles, ſo that from a good many trees ſeveral gallons may be daily collected, without injuring the trees in their growth.

Coppices are formed of theſe trees in waſte barren land, to cut as underwood every ſix, eight, or ten years, for poles, for hoops, and many uſes in huſbandry; alſo for the bruſh-wood for birch-brooms, for which there is a conſtant demand. When ſuch coppices are intended, they ſhould be formed of young plants, previouſly raiſed in the nurſery; ſee their *Propagation*; from thence planted out at five or ſix feet diſtance, which in ſeven or eight years will be ready to cut, and will ſupport a cutting every ſixth year for the broom-men, and every eighth, tenth, or twelfth year, for poles for the hoop-benders and other uſes, and for huſbandry implements.

The two ſpecies of American Birch and varieties being equally hardy as the common ſort, but more ſwift in growth, and obtain a large ſtature, may alſo be introduced in woods and other plantations among foreſt trees.

The *Betula Alnus*, or Alder-tree, grows rapidly in marſhy watery places, or meadows contiguous to rivers, brooks, and other waters, in moſt parts of Britain, and is a uſeful tree both in its growing ſtate, and its wood as timber and for poles for various uſes, which growing freely in any moiſt or boggy ſoil, it may be cultivated to good account in any waſte, marſhy, or ſwampy grounds.

In its growing ſtate it is moſt uſeful to ſecure the banks of rivers, by planting truncheons pretty cloſe, which will grow and ſend up numerous ſuckers quite from the lower roots, which effectually prevents the banks from being undermined by the current.

Theſe trees are alſo uſeful to form hedges, to fence and divide boggy or ſwampy ground.

The wood of this tree is particularly valuable for works intended to be conſtantly under water, ſuch as water-pipes, ſluices, pumps, troughs, piles, &c. and the turners apply it to various uſes.

Coppices of theſe trees in boggy ground, to be cut as coppice or underwood every eight or ten years for poles, pay very well; theſe coppices may be formed of truncheons, i. e. large cuttings of three feet long, cut from growing trees, ſharpening one end, then making holes with an iron crow two feet deep and a yard aſunder, plant the truncheons two feet in the ground, they will readily grow and ſend up ſeveral ſtems, which in ſeven years will be large enough to fell for poles, at which time clear away entirely every other ſtool, ſo that the remainder ſtand five or ſix feet aſunder, and they will afford you a fall of good poles every eighth or tenth year.

But when intended to have theſe or any of the Birches ſtand for timber, they muſt be left fifteen feet aſunder.

*The Propagation of all the Species.*

The Birch-trees are propagated either by ſeeds or layers; the common ſort afford us plenty of ſeeds in autumn, but that of the foreign ſorts is imported by the ſeeds-men from America. Sow all the ſorts in beds of light earth in autumn or ſpring, covering it about half an inch deep, and the plants will come up in April or May, keeping them clean from weeds all ſummer; the ſpring following plant them out in nurſery-rows two feet and half aſunder, to remain till they are three, four, or five feet high, then tranſplant them where they are to remain.

By layers they may be raiſed plentifully from a few proper ſtools, having been previouſly headed down to the ground to produce lower branches, which when two years old will be well furniſhed with many ſide-ſhoots, which being ſplaſhed and layed in the ground, together with all their young twigs, every one of which will grow, and be fit to be planted out in the nurſery the following autumn, and the ſtools continue to furniſh a freſh ſupply of layers annually.

By this method of laying, all the varieties of the foreign kinds are continued, for they vary from ſeed.

The Alder-tree is alſo propagated plentifully by ſeed and layers as above; alſo by cuttings of any ſize, planted in any moiſt or ſhady place, will put out roots freely, and in two or three years will become large plants of three, four, or five feet ſtature, when they may be planted out for good.

Large cuttings or truncheons of two or three feet long may be planted at once by the ſides of rivers, brooks, &c. putting them two parts of three in the ground, they will grow, and afford a cutting for poles every ſeven or eight years.

BIENNIAL PLANTS; Plants, as the title *Biennial* imports, that are only of two years duration.

Numerous plants are of this tribe, which being raiſed one year from ſeed, generally attain perfection either the ſame, or in about the period of a twelvemonth, or a little leſs or more, and the following ſpring or ſummer ſhoot up ſtalks, flower, and perfect ſeeds, ſoon after which they commonly periſh, or if any particular ſort ſurvive another year, they aſſume a dwindling and ſtraggling growth, and gradually die off; ſo that Biennials are always in their prime the firſt or ſecond ſummer.

Biennials conſiſt both of eſculents and flower-plants.

Of the eſculent kinds, the cabbage, ſavoy, carrot, parſnep, beet, onion, leek, &c. are Biennials.

Of the flowery tribe, the Canterbury-bell, French honeyſuckle, wall-flower, ſtock-July-flower, ſweet-william, China-pink, common pink, matted pink, carnation, ſcabious, holly-hock, tree-mallow, vervain-mallow, tree-primroſe, honeſty or moonwort, &c. are all of the Biennial tribe; all of which being ſown in March, April, or May, riſe the ſame year, and in ſpring following ſhoot up into ſtalks, flower and perfect ſeeds in autumn, after which moſt of them dwindle, though ſometimes the wall-flowers, hollyhocks, carnations, pinks, will ſurvive and flower the following year, but the plants become ſtraggling, the flowers ſmall and badly coloured; it is therefore eligible to raiſe a ſupply annually from ſeed, although wall-flowers, carnations, and pinks, may be continued by ſlips and layers.

BIGNONIA, Trumpet-flower, or Scarlet Jaſmine.

The *Bignonias* are of the ſhrub and tree kind, comprehend many ſpecies, three or four of which are cultivated in our ſhrubberies, and conſiſt of climbing ſhrubs and an upright tree, garniſhed ſome with winged, others with ſimple leaves, and campanulate trumpet-ſhaped flowers.

Claſs and order, *Didynamia Angioſpermia.*

*Characters.*] CALIX is monophyllous, cup-ſhaped, and quinquifid. COROLLA is one bell-ſhaped petal, having a long tube, ſwelling and five-parted at top, the two upper parts reflexed, the under ones ſpread open. STAMINA, two ſhort and two long filaments, and oblong reflexed antheræ. PISTILLUM, an oblong germen, ſlender ſtyle, and headed ſtigma. PERICARPIUM, a bivalvate pod of two cells, containing numerous winged ſeeds placed imbricatum.

The plants are moſtly of American growth; thoſe cultivated in our gardens are,

1 BIGNONIA *Radicans.*

*Radicant Climbing Aſh-leaved Scarlet Bignonia.*] Bignonia with climbing ſhrubby ſtalks, radicant or rooting at the points, mounting upon ſupport, thirty or forty feet high, ornamented with pinnated oppoſite leaves of four pair of ſmall ſawed lobes and an odd one, and all the ſhoots and branches terminated by beautiful cluſters of large trumpet-ſhaped ſcarlet flowers.

*Va-*

*Variety.*] Radicant leaſt Aſh-leaved Bignonia with ſmall flowers.

[2]BIGNONIA *Sempervirens.*

*Evergreen Climbing Virginia Bignonia.*] Bignonia with climbing ſlender ſtalks, twining upon, ſupport twenty or thirty feet high; ſimple lanceolate-leaves placed oppoſite, and trumpet-ſhaped, erect, yellow flowers, from the ſides and ends of the ſtalks and branches.

*Variety.*] Evergreen climbing four-leaved Virginia Bignonia.

[3]BIGNONIA *Catalpa.*

*Catalpa, or Tree Bignonia.*] Bignonia with an upright ſtrong woody ſtem and branches, riſing twenty feet high, ornamented with large heart-ſhaped leaves five or ſix inches long, almoſt as broad, placed by threes, and whitiſh yellow-ſtriped flowers in panicles towards the ends of the branches.

The flowers of all the ſpecies are monopetalous, tubular, long, and ſomewhat trumpet-ſhaped, (ſee the *Characters*), appearing moſtly in Auguſt, but rarely produce ſeed-pods in England.

As to their uſe in gardens, they are all employed as plants of ornament.

The firſt ſort and variety, if planted againſt high walls, will ſoon cover them, they emitting roots at all the joints of the ſtalks, which ſtrike into the joints of buildings, and mount to their tops if ever ſo high, where they will endure many years, and flower annually.

The ſecond ſort and variety being ſomewhat tender, muſt be planted againſt a warm wall, and ſheltered from froſt with mats while young.

The *Catalpa* is a very ornamental, hardy, deciduous ſhrub, or rather tree, worthy of a place in all curious ſhrubberies, as during the ſummer ſeaſon, when cloathed with its luxuriant beautiful foliage, no tree makes a more noble appearance, which, on account of its ſingular beauty, ſhould be placed conſpicuouſly, and ſome ſhould be diſpoſed ſingly upon ſpacious lawns, or other large opens of graſs-ground, and permitted to take their natural growth.

*Propagation of all the Species.*

The two firſt ſpecies and varieties may be propagated by layers; every ſhoot layed will readily grow, and will flower in two or three years.

Cuttings of the ſtrong ſhoots will alſo put out roots freely.

They may alſo be raiſed from ſeeds procured from America, ſowing them in pots in ſpring, and place them in a moderate hot-bed, from which the plants muſt be inured to the full air in ſummer, ſheltered in winter from froſt, and in ſpring plant them out in the full ground; but plants thus raiſed rarely flower in leſs than ſix or ſeven years.

The *Catalpa* may be propagated by cuttings of its young ſhoots, aided by artificial heat, planting them in pots in ſpring, which plunge either in a common dung hot-bed, or in a bark-bed; they will ſtrike in a month or ſix weeks, when they muſt be hardened to the open air, in which let them ſtand till October, then moved to a place of occaſional ſhelter from froſt, and in ſpring following plant them out in the nurſery.

This plant is alſo raiſed from ſeed, either in a warm border, or in pots, and plunged in a moderate hot-bed, which will facilitate the germination of the ſeed, which is ſometimes apt to remain a year before it begins to grow.

BIXA, Dying *Mitella*, Spaniſh *Anotta*, or French *Roucou.*

There is but one ſpecies, an evergreen ſhrub of the hot-houſe.

Claſs and order, *Polyandria Monogynia.*

*Characters.*] CALIX, a plane, obtuſe, permanent cup. COROLLA, ten large oblong petals in a double ſeries. STAMINA, numerous briſtly filaments. PISTILLUM, an oval germen, ſlender ſtyle, and parallely-bifid, compreſſed ſtigma. PERICARPIUM, an oval, heart-formed, hairy capſule of two valves and one cell.

The ſpecies is,

BIXA *Orellana.*

*American Bixa.*] Bixa with an upright ſtem ten feet high, branching out into a regular head, garniſhed with heart-ſhaped pointed leaves, placed alternate, and reddiſh flowers in panicles from the ends of the branches, ſucceeded by large, pulpy, red fruit; in great requeſt among dyers and painters.

This tender American ſhrub is retained here in ſtoves for variety.

It is propagated by ſeeds from America, ſown in pots in ſpring, and plunged in a bark-bed, and the plants are to be tranſplanted into ſeparate pots, and always retained in the ſtove.

BLIGHTS. Theſe are infectious diſtempers, which often attack our fruit-trees in ſpring and ſummer, frequently deſtroying the leaves, bloſſoms, and fruit, and ſometimes prove deſtructive to the trees themſelves.

Many

Many have attempted to account for the cauſes of Blights. Some ſuppoſe they proceed from ſome particular defect in the ſoil; others attribute the whole to the air, whilſt others are of opinion that it proceeds from the particular ſtate of the trees themſelves, eſpecially when they aſſume a weakly habit; ſome again aſcribe the diſtemper to eaſterly winds bringing vaſt quantities of inſect eggs from a diſtance, or that long dry eaſterly winds, unaccompanied by rain or night-dews, ſtop the perſpiration in tender bloſſoms, and occaſion them ſoon to wither and decay, and by long continuance of the ſame weather the leaves and tender ſhoots are alſo affected in like manner, and the perſpiring matter thickens to a glutinous conſiſtence, adhering to the ſurface, becomes nutriment to thoſe ſmall animalculæ which we often find ſo numerous on the leaves and young ſhoots of fruit-trees, diſcoverable by the ſhrivelling or curling of the leaves, and which, though not generally ſuppoſed to be the firſt cauſe of the diſtemper, yet they ſpread the miſchief conſiderably, as often, from a few twigs, they will over-run a whole tree, and ſpread themſelves to others on every ſide, to the deſtruction often of a whole wall of trees.

Againſt this annoyance to our fruit-trees there is no guard, nor any certain general method of cure after the trees are once conſiderably attacked.

Various methods however are practiſed to ſave wall and eſpalier-trees when the infection appears, ſuch as, when the diſtemper is ſlight, to pinch off all the worſt leaves, to prevent its ſpreading; alſo to cut off part, or even whole ſhoots, when moſt of the leaves on them, or the ſhoots themſelves, are infected, cutting them off below the diſtempered parts, and they will probably ſhoot out again the ſame or next year. After theſe operations frequently daſh the trees with water in a morning or evening, either out of a common watering-pot, or a hand-engine, the latter of which is the moſt effectual, which by a daily repetition for a week, will have a great effect in preventing the diſaſter from ſpreading, if not totally eradicate it, when not very formidable.

Some ſtrew tobacco duſt over the trees, or ſprinkle them with water in which tobacco-ſtalks have been infuſed.

There is a ſpecies of Blight called a fire-blaſt, the moſt certain and ſudden deſtruction to fruit-trees of any, as in a few hours it not only deſtroys the leaves and fruit, but frequently the branches, and ſometimes whole trees, and for which there is not the leaſt remedy.

A ſort of peſtilence ſometimes attacks wall-fruit trees, which cauſes the leaves and ſhoots to become black and clammy, generally terminating in the deſtruction of the tree, and will run through the whole walling, if not ſtopped by removing the diſtempered plant, and waſhing that part of the wall with lime or ſtrong brine.

BLITUM, Blite, or Strawberry-ſpinach.

The plants are herbaceous annuals of the ornamental kind, riſing with ſtems two or three feet high, garniſhed with ſpinach-ſhaped leaves, and cluſters of ſtrawberry-like fruit; hence the name Strawberry-ſpinach.

Claſs and order, *Monandria Digynia.*

*Characters.*] CALIX is tripartite, ſpreading, and permanent. COROLLA none STAMINA, one ſmall briſtly filament, and double antheræ. PISTILLUM, an oval, pointed germen, two ſtyles, and ſimple ſtigma. PERICARPIUM, a ſmall, oval, compreſſed capſule, having one globular compreſſed ſeed the ſize of the ſeed-veſſel.

The ſpecies are,

[1]BLITUM *Capitatum.*

*Capitated Strawberry-Spinach.*] Blitum with upright herbaceous ſtalks two feet and half high, garniſhed with triangular ſpinach-ſhaped leaves, and flowers in cluſtered heads at the joints and crown of the ſtalks, ſucceeded by red ſtrawberry-like fruit.

*Variety.*] Capitated White Strawberry-Spinach.

[2]BLITUM *Tartaricum.*

*Tartarian Strawberry-Spinach* ] Blitum with herbaceous ſtalks, riſing a yard high; triangular, acutely-indented, ſpinach-ſhaped leaves; and ſingle heads of flowers, growing only from the ſides of the ſtalks, ſucceeded by ſmall, red, ſtrawberry-like fruit.

[3]BLITUM *Virgatum.*

*Dwarf Virgate Strawberry-Spinach.*] Blitum with a ſlender ſtalk about a foot high; triangular, ſpinach-ſhaped, indented leaves; and heads of flowers growing ſparſedly all along the ſides of the ſtalk, ſucceeded by ſmall, reddiſh, ſtrawberry-fruit.

*Varieties.*] Dwarf Striped-leaved Strawberry-Spinach—Dwarf White Strawberry-Spinach.

All theſe ſpecies and varieties are hardy annuals, and riſe in ſpring firſt with a few leaves, ſhooting up ſtalks in May or June, flower and ripen fruit in July, Auguſt, and September, and ſoon after periſh.

They

They merit culture as plants of ornament, for the ſingular variety of their fruit, being the ſize of common wood-ſtrawberries, and numerous on the ſtalks, make a fine appearance in July and Auguſt, but are not eatable.

They ſucceed in the common borders, and ſome planted in pots to adorn court-yards, in aſſemblage with other potted plants, have a pretty effect.

Their propagation is by ſeed annually in March or April, ſown either in patches in the borders where they are to remain, or together in a bed of common earth, to be afterwards tranſplanted into the places where they are to flower, covering the ſeed about half an inch deep, and the plants will appear in a month, obſerving, if they are ſown in patches, to leave only three in a patch, at five or ſix inches diſtance, and if ſown in a bed for tranſplanting, they muſt be planted out before they begin to ſhoot up their ſtems, diſpoſing them as above in different parts of the borders; and if any are to be potted, plant one in each pot, giving the whole occaſional waterings.

When their ſtems are advanced, ſupport each with a ſtick, otherwiſe the weight of the berries will bear them down to the ground.

BOCCONIA, Greater Tree Celandine.

There is but one ſpecies, a ſhrubby exotic of the ſtove, eſteemed for the beauty of its large foliage.

Claſs and order, *Dodecandria Monogynia.*

*Characters.*] CALIX, two oval concave leaves. COROLLA, no petals. STAMINA, twelve ſhort filaments, and long antheræ. PISTILLUM, a large, roundiſh, contracted germen, ſemi-bifid ſtyle, and ſingle ſtigma. PERICARPIUM, an oval compreſſed fruit of one cell, full of pulp, and one ſeed.

The ſpecies is,

BOCCONIA *Fruteſcens.*

*Shrubby Bocconia, from Jamaica.*] Bocconia with an upright, ſtrait, robuſt, branching ſtem, growing ten or twelve feet high, covered with a white bark; large, deeply-ſinuated, glaucous leaves, ten or twelve inches long, half as broad, placed alternate; and flowers in looſe ſpikes from the ends of the branches.

The whole plant abounds with a yellow acrid juice.

This plant is propagated by ſeeds from America, ſowing them in ſpring in pots of light earth, and plunge them in a bark hot-bed; and when the plants come up, prick them into ſeparate pots, which muſt always be kept in the ſtove.

BOMBAX, the Silk-Cotton-tree; ſo called from the fine ſilky down contained in the ſeed veſſel.

There are three ſpecies, trees of extraordinary magnitude and lofty ſtature, natives of America, Aſia, and Africa, where, modern writers affirm, they are ſo large, that ſixteen men cannot fathom them, and ſo tall, that an arrow cannot reach their top, with heads ſo widely diffuſed (ſays Boſman in his Deſcription of Guinea) that 20,000 men, cloſely armed, might eaſily ſtand under the branches.

They are retained in this country in hot-houſes, as plants of ſingularity, and for the variety of their ſingular foliage; but there are little hopes of their ever flowering in England.

Claſs and order, *Monadelphia Polyandria.*

*Characters.*] CALIX is monophyllous, campanulate, quinquifid, and permanent. COROLLA is divided into five oval concave ſegments. STAMINA, many filaments united below, and incurved antheræ. PISTILLUM, a round germen, ſlender multiparted ſtyle, and round ſtigmas. PERRICARPIUM, a large, oblong, turbinated, ligneous, quinquivalvular capſule of five cells, full of a cottony down, incloſing many round ſeeds.

The ſpecies are,

[1]BOMBAX *Ceiba.*

*Ceiba, or Thorny Bombax.*] Bombax with an upright ſtrait trunk, cloſely armed with ſhort ſtrong ſpines, branches coming out near the top, adorned with leaves compoſed of five long ſpear-ſhaped lobes, connected at their baſe, and polyandrous flowers at the ends of the branches, ſucceeded by oval fruit larger than a ſwan's egg, filled with ſeeds and cotton.

[2]BOMBAX *Pentandrum.*

*Pentandrous Smooth Bombax.*] Bombax with an upright, ſtrait, unarmed trunk, branching at top, garniſhed with leaves compoſed of nine long ſpear-ſhaped lobes, united at their baſe, and pentandrous flowers from the end of the branches, ſucceeded by large oval fruit full of ſeeds and cotton.

[3]BOMBAX *Heptaphyllum.*

*Heptaphyllous Smooth Bombax.*] Bombax with an upright, ſtrait, unarmed trunk, branching near the top; heptaphyllous, or ſeven-lobed leaves, united at the baſe; and polyandrous flowers, ſucceeded by large oval fruit, containing ſeeds and cotton.

Theſe

Theſe trees being natives of both Indies, and other warm parts of the world, in this country muſt always reſide in a hot-houſe.

They are raiſed from ſeeds procured in the capſules from the Weſt Indies Sow the ſeeds in ſpring in pots of light earth, and plunge them in a ſubſtantial hot-bed of dung or tan, where the plants will appear in three or four weeks, which are to be pricked into ſeparate ſmall pots, plunging them in the bark-bed, giving ſhade and water, and let them be conſtantly kept in the ſtove, ſhifting them occaſionally into larger pots and freſh earth, watering them plentifully in ſummer, but moderately in winter.

BONTIA, Wild Olive of Barbadoes.

This genus comprizes one woody pyramidal evergreen of the ſtove, of ornamental appearance.

Claſs and order, *Didynamia Angioſpermia.*

*Characters.*] CALIX, a ſmall quinquifid permanent cup. COROLLA, one ringent petal, with a long tube gaping above, the upper lip erect and emarginated, the under one trifid and revolute. STAMINA, four filaments, two longer than the others, and ſimple antheræ. PISTILLUM, an oval germen, ſimple ſtyle, and bifid ſtigma. PERICARPIUM, a large oval berry, including an oval nut.

The ſpecies is,

BONTIA *Daphnoides* ] Bontia with a woody ſtem and branches, riſing ten feet high; oblong, narrow, ſmooth, thickiſh leaves, crenated at the edges; and flowers from the ſides of the branches, ſucceeded by large oval fruit, that ſometimes ripen in England.

This plant is propagated eaſily by ſeeds in a hot-bed; alſo by cuttings, with the ſame aſſiſtance, and the plants muſt always remain in pots, and reſide in the hot-houſe.

BORAGO, Borage.

Of this genus are two hardy herbaceous plants, cultivated in our gardens, an annual and a perennial, riſing with ſtalks two feet high, ſimple leaves, and monopetalous flowers.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX is five-parted at top, and permanent. COROLLA, a ſingle rotated petal, with a ſhort tube, ſpreading and five-parted above. STAMINA, five connivent filaments, and oblong connivent antheræ. PISTILLUM, four germina, ſlender ſtyle, and ſingle ſtigma. PERICARPIUM none, the calix becomes ſwollen, and contains four roundiſh ſeeds.

The ſpecies are,

[1]BORAGO *Officinalis.*

*Common Annual Borage.*] Borago with annual roots, large, oblong, rough leaves, ſpreading on the ground; rough branching flower-ſtalks two feet high, garniſhed with leaves placed alternate, and flowers from the ſides and top of the ſtalk and branches

*Varieties.*] Common Borage with blue flowers—with red flowers—with white flowers—with variegated leaves.

[2]BORAGO *Orientalis,*

*Oriental, or Conſtantinople Perennial Borage.*] Borago with fleſhy ſpreading perennial roots, ſending up large heart-ſhaped leaves, and ſtalks two feet high, dividing upward into footſtalks, terminated by panicles of pale blue flowers.

The *Borago Officinalis* is the Common Annual Borage, an excellent pot-herb, and the young leaves and flowers are by many eſteemed to eat as a ſallad and for cool tankards, and the flowers alſo for medicine.

The plants riſe in ſpring, ſhoot up flower-ſtalks in May, June, and July, and continue flowering till autumn, when they perfect ſeeds, and then die.

They are propagated by ſeeds any time in ſpring, ſummer, or autumn, in any common ſoil, in the place where the plants are to remain, obſerving, when a conſtant ſucceſſion of the plants are required, it is proper to make three different ſowings from ſpring till autumn. Sow the ſeed broad-caſt, and rake it in, and when the plants have leaves an inch broad, clean and thin them by hoe to ſix or eight inches diſtance.

If this plant is permitted to ſtand to ripen and ſcatter its ſeeds, there will be a ſupply of plants at almoſt all ſeaſons of the year, which will continue riſing every time of ſtirring the ground.

The Oriental Borage is a perennial, and chiefly eſteemed as a flowering plant; it will proſper in any dry ſoil, and its propagation is either by ſeed, or dividing the roots in autumn.

BORDERS. In gardening, Borders are uſeful narrow compartments of ground, which divide and encompaſs the different principal diviſions of a garden, and bound the walks.

Borders may be conſidered of two kinds, the uſeful and ornamental.

For uſeful purpoſes, one ſort are thoſe which are carried round the walls of a kitchen-garden,

garden, and are moſt uſeful, whereon to plant various ſorts of dwarf fruit-trees, ſuch as peaches, nectarines, apricots, &c. to be trained to the wall to form wall-trees; and ſuch of thoſe borders that are of a ſouth aſpect, are likewiſe extremely uſeful, whereon to raiſe various early eſculent herbs, roots, and legumes; and thoſe of the other aſpects are proper for the raiſing and pricking out many ſorts of plants in ſummer, that require ſome degree of ſhade at particular periods of growth.

Theſe borders ſhould be a yard at leaſt wide, but if ſix or eight feet, the greater advantage it will be to the trees, &c.

Another ſort of uſeful Borders are thoſe which divide and ſurround the principal diviſion of the kitchen-garden, and immediately verge the main walks, which are uſeful, whereon to plant ranges of dwarf apple, pear, plum, medlar, and cherry-trees, &c. to form an eſpalier (ſee ESPALIER); for which purpoſe the borders ſhould be five feet broad, and the line of trees placed four feet from the outer edge thereof, ſo that there will be a four feet Border without, and a foot wide one within the eſpalier, both of which will be uſeful in the culture of many ſmall eſculent plants.

Borders in pleaſure-grounds are to be conſidered as of the ornamental kind.

In this diſtrict formerly Borders were very predominant; almoſt every walk was bounded on each ſide by a Border, embelliſhed with various ornamental plants: this taſte however is now almoſt ſupplanted; but a grand walk, ornamented on each ſide with a ſpacious border full of curious flowering plants, makes a noble appearance.

Likewiſe Borders for flowers, carried round the boundary of lawns near the habitation, have alſo an agreeable effect.

In the ancient taſte of parterre-works Borders greatly prevailed, the parterres being principally formed of numerous narrow Borders, with intervening alleys of the fineſt turf, gravel, ſhells, or ſand, the parterre being firſt bounded by regular borders, and within which were carried on the various geometrical works in many curious devices, but which is now baniſhed our gardens, like all other works of regularity: for the ſake of variety, ſome works of this nature might ſtill be admitted, particularly in the Chineſe taſte. See PARTERRES.

Borders for particular curious flowers, ſuch as the curious ſorts of hyacinths, tulips, ranunculas, anemones, carnations, &c. may be made either along the ſides of walks, or detached.

The proper breadth of Flower-borders is, that, if intended chiefly for ſmall plants, or for the different ſorts of bulbous-rooted flowers, they ſhould be four feet wide; but if deſigned for all ſorts promiſcuouſly, they ought to be ſix or eight feet in breadth.

Borders that immediately verge gravel or ſand-walks, ſhould be planted with edgings of dwarf evergreen plants; ſeveral ſorts are uſed, ſuch as box, thrift, pinks, &c. but the former is the neateſt and moſt durable edging yet known. See BUXUS.

The Borders ſhould always be raiſed two or three inches above the common level, and finiſhed off with a gentle ſwell or rounding.

BOSEA, *Yerva-Mora*, or Shrubby Golden-rod.

This genus furniſhes but one ſpecies, an exotic ſhrub of the green-houſe.

Claſs and order, *Pentandria Digynia*.

*Characters.*] CALIX is five roundiſh concave leaves. COROLLA, no petals. STAMINA, five filaments and ſimple antheræ. PISTILLUM, an oval oblong germen, no ſtyle, but two ſtigmas. PERICARPIUM, a globular berry, having one ſeed.

The ſpecies is,

BOSEA *Yerva-Mora*.

*Yerva-Mora, or Golden-rod-tree.*] Boſea with a ſtrong woody ſtem, dividing irregularly into branches, grows eight or ten feet high, garniſhed with long leaves, whitiſh underneath, with purple veins, and purple flowers in cluſters from the ends of the branches.

It is an exotic from the Canary iſlands, and is retained here, to add to the collection of the green-houſe.

Its propagation is by cuttings planted in pots in ſpring; and, if plunged in a hot-bed, will more quickly emit roots, though they often effect it without that aid.

BOSQUETS are clumps, or detached compartments of ornamental trees, ſhrubs, and plants, diſpoſed either in a regular or irregular form, to embelliſh gardens, parks, &c.

Theſe compartments have a very ornamental effect in gardens, and are compoſed of a great variety of deciduous and evergreen trees, and herbaceous perennials of tall growth. Their dimenſions ſhould be proportioned to the extent of the ground, even from ten to a hundred feet, or more, in width, though the

ſize and form ſhould be varied in different expoſures; and as to figure, ſome may be planned in different regular forms, others in ſeveral different irregular figures, to effect the greater diverſity; but in ancient deſigns, they were generally all diſpoſed in regular ſquares, angles, circles, octagons, &c. and commonly each ſeparate Boſquet was bounded by regular hedges, kept low, and in exact order, by an annual ſhearing, having grand entrances formed into porticos, and other architectural devices; and within the hedges of the large compartments, walks of graſs, gravel, or ſand, were often carried round, and between the trees; but I ſhould not adviſe any general work of ſurrounding theſe compartments with hedges, for the trees and other plants will appear to greater advantage in open rural clumps, although, for the ſake of variety, a regular Boſquet, ſurrounded as above, might be here and there admitted in ſpacious gardens; but the hedges ſhould not be permitted to be more than four feet high, and may be either of evergreen, or deciduous plants: of evergreens, ſuch as yews, holly, lauruſtinus, laurel, alaternus, phillyrea, evergreen-oak, tree-box, bay; and of deciduous kinds, hornbeam, beech, elm, lime, alder; all of which ſhould be neatly ſheared annually, and kept ſo low that the trees and plants within may be eaſily ſeen from the outer walks, lawns, &c. See HEDGES.

The diſpoſition of theſe compartments, both of the regular and irregular deſigns, ſhould be ſo varied as to produce the greateſt diverſity; ſome placed towards the boundaries of grand lawns and ſpacious opens, others in forming ſhrubberies, wilderneſs-works, &c. and ſome natural clumps may be ſtationed on the boundaries of rural avenues; alſo diſtributed in different parts of parks.

In planting and embelliſhing theſe compartments, great variety of ſhrubs and trees ſhould be employed, both evergreen and deciduous, of different magnitudes, ſhades, and times of flowering, and particular care is neceſſary to diſpoſe the trees and ſhrubs according to their ſeveral growths and ſtatures, ſo as they riſe gradually one above another from the ſides to the middle, and at ſuch proportionable diſtances, that there may be full ſcope for the rural diffuſion of branches, ſo as each ſort may diſplay its ſpreading head according to its natural growth.

It is moſt adviſeable to plant the deciduous plants and evergreens in ſeparate clumps, though a few dwarf evergreens may be diſtributed in the fronts of the deciduous compartments; and in the clumps of both ſorts may be planted alſo, towards the ſides, various kinds of tall perennials, and near the edges low plants of primroſes, polyanthus, violets, daffodils, &c.

All the culture neceſſary to the various plants in theſe compartments, is to cut out any dead wood, and retrench or ſhorten very irregular branches, juſt to preſerve them within moderate bounds, and each ſort diſtinct; and the ground between the plants to be annually dug, eſpecially in ſmall Boſquets, and hoed two or three times in ſummer to deſtroy weeds.

BOWLING-GREEN, a ſpacious level graſs-plat in pleaſure-grounds, deſigned both for ornament, and the recreation of bowling in ſummer.

This compartment is generally planned near the habitation, contiguous to the back or ſide-fronts, ſometimes ſerving alſo by way of a lawn to that part; or it may be ſtationed at the termination of a grand walk or avenue of moderate extent, for it ſhould not be far from the houſe; or it might be contrived amidſt any contiguous detached plantation, or wilderneſs-work, ſerving alſo by way of a grand opening to ſuch places, and ſhould at any rate have the advantage of the ſhade of tall trees, ſo ſtationed on the boundary as to afford ſhade, which, at leaſt, ſhould be pretty conſiderable in an afternoon, as that being the time of day company uſually walk out to the diverſion of bowling.

As to the dimenſions, that where there is ſcope of ground, ſhould not be leſs than an acre; and as to figure, the moſt common is that of an exact ſquare; but ſome are alſo oblong, others are circular, though, to ſuit the general plan or figure of the ground, it may be contrived either of a regular form, or any well-calculated irregular deſign, when conſiſtent with the other works of the garden; and its boundaries may be a ſpacious border, either ſtrait or ſerpentine, embelliſhed with the choiceſt ſhrubs and flowers, although, in the ancient regular works, the boundary was very commonly a regular graſs-ſlope of two or three feet perpendicular height, ſometimes forming a ſort of terraſs round, with a gravel-walk at top.

The plane or ſurface of the Green ſhould be of a horizontal level, and as high at leaſt as the general level of the adjoining ground, ſo as to preſerve it always free from ſtanding water.

It ſhould be levelled in an exact manner, and layed with the fineſt graſs-turf that can be procured from a cloſe-paſtured common or downs. See TURF.

The dimenſions ſhould be ſet out with ſtakes placed round the extremity fifteen feet aſunder, then take the determined level by five ſtakes, that is, one in the middle levelled to the determined height, and according to this, level in four more, one on each ſide of the ground, as directed under the article LEVELLING, ſo that there will be five ſtakes in two lines ſet in a true level; then place ſtakes in rows croſs-ways at fifteen feet diſtance, to form the ground into pannels, for the greater convenience of levelling it to truth, obſerving to level in theſe according to the above five ſtakes; and when this is done, proceed by line and ſpade to form the ground, by making up lines firmly from ſtake to ſtake according to the mark of level, and ſo make up and rake the pannels according to the lines, working every part equally firm, that it may not hereafter ſink into hollows; and if the ſurface has two or three inches depth of light, ſandy, or any poor dry earth, it will render the graſs finer.

The turf for laying the Green is to be cut in the uſual way a foot wide, a yard long, and an inch thick, which muſt be laid with the greateſt exactneſs, well-beating and rolling it repeatedly, as directed under the article GRASS.

To keep the Green in perfect order, it muſt be conſtantly poled and rolled once or twice a week, or oftener, as you ſhall ſee it neceſſary; for as often as worm-caſts appear it muſt be poled, to ſcatter them about, then directly rolled with a wooden roller, to which the ſcattered worm-caſts readily adhere, whereby the ſurface is rendered clean; it muſt alſo be frequently rolled with a heavy roller, to preſerve a firm and even ſurface; mowing muſt alſo be duly performed in the proper ſeaſon once a week at leaſt, but if much played upon, it will require mowing two or three times a week at ſome particular times, eſpecially where the graſs abounds with common wild daiſies.

All weeds that appear ſhould be carefully picked out, otherwiſe they will encreaſe, and greatly deface the graſs.

BRACTEA, a Floral Leaf, the botanic term for ſuch leaves that are attendant on the flower, coming out with it on the ſame ſtalk, differing in ſize, ſhape, and colour, from the other leaves of the plant, and are often ſituated ſo near the flower as to be ſometimes miſtaken for the calix.

BRACTEA is alſo one of the ſeven fulcra, or props of plants. See FULCRA.

BRASSICA, the Cabbage, Cauliflower, Broccoli, &c.

This genus is very comprehenſive in uſeful eſculents of the kitchen-garden; it includes not only the numerous tribe of cabbages, ſavoys, borecole, and coleworts, but alſo the cauliflower, and all the varieties of broccoli, and, according to Linnæus, alſo the turnep; but to render every thing as intelligible as poſſible for practice in their cultivation, we ſhall treat of each article in a ſeparate diviſion, under the generic head Braſſica.

Claſs and order, *Tetradynamia Siliquoſa.*

*Characters.*] CALIX, four ſpear-ſhaped, concave, deciduous leaves. COROLLA, four oval plane petals placed croſs-ways. STAMINA, four long, and two ſhort filaments, and erect pointed antheræ. PISTILLUM, a taper germen, ſhort ſtyle, and headed ſtigma. PERICARPIUM, a long depreſſed pod of two cells, filled with round ſeeds.

Modern botaniſts contend, that there is only one real ſpecies of cabbage, and that the original ſpecies is the wild perennial ſea-cabbage, and the parent of all the different cultivated varieties of cabbage, ſavoys, borecole, coleworts, turnep-cabbage, cauliflower, and broccoli. Whatever the five former ſorts may be, the cauliflower is apparently a diſtinct ſpecies of the ſame genus, and the broccoli is moſt probably a variety of the cauliflower.

The original ſpecies, according to modern botaniſts, is,

BRASSICA *Sylveſtris.*

*Wild Perennial Sea-Cabbage.*] Braſſica with a perennial root and ſtalk, the ſtalk dividing into many perennial branches, garniſhed with cut leaves, placed alternate, and a cluſter of leaves, terminating all the ſhoots and branches.

It grows wild on Dover-Cliffs and other ſea-coaſts, and if required in gardens for curioſity, it may be raiſed from ſeed like other cabbages.

From this wild cabbage, ſay modern botaniſts, were obtained all the following cultivated varieties of our gardens.

[1]BRASSICA *Capitata*, Common Heading Cabbage, including a large train of varieties.

[2]BRASSICA *Capitata Saubada*, Savoy Cabbage, or Savoy, including varieties.

[3]BRASSICA *Fimbriata*, Fringed Cole, or

Borecole, including Scotch-Cole, and moſt other varieties of open Colewort.

[4]BRASSICA *Caulo-rapa*, Turnep-Cabbage.

[5]BRASSICA *Cauliflora*, the Cauliflower.

[6]BRASSICA *Broccoli*, the Broccoli, including varieties.

The following is undoubtedly a diſtinct ſpecies, which although, in its general habit, is apparently a very different plant from the cabbage-kind, yet the characters of its flowers being the ſame, Linnæus ranges it as a ſpecies of *Braſſica*.

[7]BRASSICA *Rapa*, RAPA, or the Turnep.

As the above articles are commonly conſidered as different plants among gardeners, and moſtly requiring different culture, we ſhall treat of them, and their reſpective varieties, under ſeparate heads; and firſt of the Common Cabbage.

*Firſt Diviſion.*

[1]BRASSICA *Capitata*, Common Heading Cabbage, and varieties.

The varieties of this ſort are numerous, and are all denominated Cabbages, from the circumſtance of their inner leaves turning in cloſely one over another, till by degrees they form a large, compact, globular, or oval head, ſome varieties of which obtain an enormous magnitude, and ſometimes weigh fifty or ſixty pounds.

As ſome varieties are in perfection in ſummer, others late in autumn, they are divided into different claſſes, viz. 1. Summer Cabbages, 2. Autumn Cabbages.

The Summer Cabbages are,

[1]*Early Summer Cabbage.*] *Varieties*, Small roundiſh early Cabbage—Larger oblong early Cabbage.—The firſt ſort comes early in May, the ſecond about the middle, or towards the latter-end; both of which ſoon become very hard and crack, ſo there ſhould not be any conſiderable quantity raiſed for private ſervice.

[2]*Sugar-loaf Cabbage.*] *Varieties*, Early Dwarf Sugar-loaf Cabbage—Large Hollow Sugar-loaf Cabbage.—The firſt is a ſmall, longiſh, pyramidal Cabbage, comes early in June, and is very ſweet while young, but ſoon grows hard; the ſecond is a fine, large, pyramidal, hollow Cabbage, comes the end of June, and is in fine perfection in July and Auguſt, ſeldom grows hard or cracks, and is a fine family or marketable Cabbage.

[3]*Ruſſia Cabbage.*] A ſmall roundiſh Cabbage, comes in July, heads very faſt, and ſoon grows hard; but if uſed while young and hollow is very ſweet and tender.

The following are autumn and winter cabbages.

[4]*Common Round White Cabbage.*] A middle-ſize, roundiſh, very white Cabbage; is in perfection in Auguſt and September, gradually acquires a degree of hardneſs, and is hardy to endure the winter.

[5]*Long-ſided Cabbage.*] A large, long, ſomewhat hollow Cabbage, comes in for uſe in September, and continues excellent all October and November, and ſeldom grows very hard.

[6]*Hollow Cabbage.*] A very large oval hollow Cabbage, never grows hard, is exceeding ſweet and tender eating, and is in high perfection in September and October.

[7]*Flat-top'd Cabbage.*] A very large ſpreading Cabbage, generally cabbaging very broad, and flat at top, and pretty cloſe and firm, is in perfection in September, and will continue till Chriſtmas.

[8]*Muſk Cabbage* ] A middle-ſize, roundiſh, hollow, very tender, criſp-eating Cabbage, of a muſky ſcent; is in perfection from September till Chriſtmas.

[9]*Giant, or Great Scotch Cabbage.*] An admirable, large, roundiſh Cabbage, heading very cloſe and hard, arrives to perfection in September and October, and will continue all winter; valued principally as a Field-cabbage for feeding cattle.

[10]*Red Cabbage.*] A middle-ſize, roundiſh, thick-leaved Cabbage, heading very hard, the whole as red as blood, and the darker the red, and the more thick and fleſhy the leaves, without any white in the ribs and veins, the more valuable; is in perfection from autumn until the end of winter, eſteemed chiefly as a choice pickle, alſo to ſhred raw to eat as a ſallad.

All theſe varieties of Cabbage are of the biennial tribe, being raiſed and attain perfection one year, the next they ſhoot up into ſtalk for flower and ſeed, and ſoon after totally periſh.

They are all raiſed from ſeed annually in beds of common earth, from which they muſt be tranſplanted; the time for ſowing is autumn and ſpring; thoſe raiſed in autumn arrive to perfection early the following ſummer and autumn, and the ſpring-ſowings cabbage the ſame year, but not till autumn and beginning of winter, and ſeldom in ſuch perfection as the autumn-raiſed plants. See their Culture.

*Culture of the Summer Kinds.*

The early Summer Cabbage, the Sugar-loaf Cabbage, and Ruſſia Cabbage, are generally cultivated for ſummer ſervice, and

may

may either be ſown in ſpring or autumn; but by raiſing the plants in autumn, i. e. Auguſt, they arrive to perfection early the following ſummer, that is, ſome of which are planted out in October or November, the others in the ſpring; the early kinds attain perfection in May, which will be ſucceeded by the Sugar-loaf and Ruſſia Cabbage in June and July, furniſhing a ſupply till autumn, when theſe will be ſucceeded by the ſpring-raiſed plants, either of the ſame, or large late ſorts; but the large Sugar-loaf Cabbage is what I ſhould chuſe to cultivate principally for the general ſummer crop, particularly for ſupply of a family, being the fineſt eating Cabbage, and continues the longeſt in perfection; though for market-uſe they often raiſe a larger quantity of thoſe that take up the leaſt room, and come in and out the ſooneſt; for the early kinds cabbage very faſt, ſoon grow hard, and do not continue good above a month.

Therefore, in order to raiſe an early and general ſummer crop of any, or all of theſe ſorts, let ſome good freſh ſeed be procured for ſowing the firſt or ſecond week in Auguſt; mark the time, for if ſown earlier, the plants are apt to fly up to ſeed in ſpring, and if ſowed much later, they will not acquire due ſtrength before winter.

At that time prepare a ſpot of rich ground in an open expoſure, digging it neatly one ſpade deep, and divide it into one or more four feet wide beds; directly ſow the ſeed, each ſort ſeparate, and immediately tread and rake it in. If the ſeaſon proves ſhowery, the plants will riſe in ten or twelve days; but if dry weather prevails, it is neceſſary to water the beds frequently both before and after the plants appear, and keep them clean from weeds.

About the middle of September, or when the plants have leaves an inch or two broad, it is proper to prick out a quantity of the largeſt from the ſeed-bed into nurſery-beds, to acquire due ſtrength previous to their being planted out for good in October and ſpring. For this purpoſe of pricking out, dig an open ſpot of the beſt ground, divide it into four feet wide beds, and rake the ſurface ſmooth; here prick the plants in rows ſix inches diſtance, and three or four inches apart in the lines, giving directly a hearty watering, which, if dry weather ſucceed, ſhould be repeated occaſionally.

Here they are to remain, ſome till October or November, and the principal part till February or March, at each of which times a quantity of the ſtouteſt plants are to be tranſplanted for good into the places where they are finally to remain to cabbage; good ground in an open expoſure muſt be allowed them, and if this is well dunged, it will be a particular advantage to the crop, digging in the dung one ſpade deep; then by line and dibble proceed to put in the plants in rows, the ſmall early kinds two feet row from row, and about the ſame diſtance in the lines; but the large Sugar-loaf kinds ſhould be ſet two feet and half diſtance every way, and a double quantity of theſe ſorts ſhould alſo be planted, if for the ſervice of a family, for the early kinds ſeldom continue long before they grow hard. Thoſe of each ſort that are planted in autumn will come in for uſe the earlieſt; and the ſpring plantation will ſucceed them regularly. Obſerve that, as the autumn plantation ſometimes ſuffers by the ſeverity of froſt, or other cauſes, in winter, when this is the caſe, the deficiencies muſt be made good occaſionally from thoſe in the nurſery-beds.

Thoſe plants that have remained in the nurſery-beds all winter, ſhould be planted out finally in February, though, if they are much cut by the winter's froſt, it is proper to let them remain until March or April to recover, planting them as above directed.

When the winter happens to prove ſo ſevere as to cut off moſt of the autumn-raiſed plants, recourſe muſt be had to an early ſpring ſowing in February, or early in March, but the ſooner the better.

But where a conſtant ſucceſſion of perfectly young Cabbages are required to be continued through the ſummer and autumn ſeaſons, it is eligible to perform a ſpring and ſummer ſowing, to ſucceed thoſe of the autumn raiſing; therefore ſow ſome of the Sugar-loaf kind in February or March, and more about the middle of May, managing them as already directed, which will furniſh a ſupply of young Cabbages from Auguſt till December.

All the culture theſe crops require after being finally planted out, is to hoe the ground occaſionally between them in dry weather, to deſtroy weeds, and when the plants have advanced a little in growth, to draw ſome earth once or twice about the bottom of their ſtems, which will ſtrengthen the plants, and forward them conſiderably, that probably the earlieſt ſorts will make an effort for heading early in May, when, if you are anxious to have them as forward as poſſible, ſome of the beſt

beſt may be aſſiſted, by tying their leaves regular together with an oſier-twig, or piece of baſs, which will blanch them internally, make them criſp and ready for the table eight or ten days ſooner. When the early kinds are cut for uſe, permit the ſtalks to remain to produce a crop of ſprouts, which they will effect abundantly; and theſe may either be gathered while young and green, or ſome might ſtand to form little heads, either of which are in many families preferred to any other ſummer greens; for which purpoſe, therefore, of yielding ſprouts, a quantity of the Sugar-loaf Cabbage-ſtalks ſhould be particularly left all ſummer and autumn.

*Culture of the Autumn Kinds.*

As already noticed, the autumn and winter Cabbages are, the Common Round White Cabbage—Long-ſided Cabbage——Hollow Cabbage—Flat-topped Cabbage—Muſk Cabbage—Giant or Scotch Cabbage—and the Red Cabbage.

Theſe ſorts are adapted principally for autumn and winter uſe, as they rarely attain tolerable perfection before Auguſt, and ſome of the larger kinds not till September and October, and continue in excellent condition till Chriſtmas, or ſometimes till the end of winter, ſome of which arrive at an enormous bulk, and if uſed while young, that is before they grow hard, are excellent eating.

The ſeaſon for ſowing all theſe late kinds is either in autumn or ſpring, but to have a large ſucceſſion, it is proper to ſow ſome at both ſeaſons; thoſe ſowed in autumn, i. e. the firſt week in Auguſt, arrive at perfection betimes the following Autumn, that is, Auguſt and September; and the ſpring ſowing come in about Michaelmas, though they ſeldom attain any tolerable perfection till the end of October, and are very fine in November and December, but rarely obtain ſo large a growth as the autumn-raiſed plants.

As before obſerved, the autumn ſowing is to be performed in the beginning of Auguſt, and the ſpring ſowing in March, or early in April.

The ſame method of ſowing the ſeed, and pricking out the plants, is to be obſerved, as directed for the ſummer kinds; and the time for tranſplanting them finally is, for the autumn-raiſed plants, a few in October, but the principal part in February, or early in March, and the ſpring-raiſed plants will be ready to plant out in May or June; all of which muſt have an open expoſure, well-dunged ground, and the plants ſet in rows two feet and half at leaſt diſtance; but for the larger kinds, a yard diſtance each way ſhould be allowed. All the culture they need is hoeing, to extirpate weeds, and drawing earth about their ſtems, which is an eſſential piece of culture to all the Cabbage kind.

The Red Cabbage is valued principally for pickling and ſtewing, and is in perfection in autumn and winter; it requires exactly the ſame culture as the former ſorts. The ſeed may be ſown in autumn or ſpring, though, as being a late Cabbage, the ſpring-raiſed plants rarely attain any tolerable ſize, therefore it is proper to ſow the main crop early in Auguſt, and the plants will be fit to prick out in September or October in nurſery-beds, to remain till February or March; then plant them out finally into an open ſituation, where they will arrive at due perfection about Michaelmas, and continue ſeveral months.

*Cabbage Coleworts.*

Cabbage Coleworts are now almoſt univerſally ſubſtituted in lieu of the common open green Colewort, which, though of eſtimation on account of its hardineſs, in being proof againſt froſt, yet, as table-greens, are apt to be tough and rank-taſted, and greatly inferior to the former. What was originally underſtood by Coleworts, is ſuch Cabbage-greens that never cloſe or cabbage, but always remain quite open and green to the heart, ſo were formerly raiſed in autumn and winter as open greens; and that by uſing Cabbage-plants as ſuch while they continue open and green, are now denominated coleworts, which are the moſt excellently ſweet and tender greens that can be cultivated for autumn and winter eating, and continue exceeding fine all the ſpring, and ſupply the table till the arrival of ſummer Cabbages; ſo that for ſupply of a family, a conſiderable quantity ſhould always be raiſed every autumn.

Any ſort of white Cabbages may be ſown for this purpoſe of Coleworts, though the Sugar-loaf kind ſurpaſſes all the other ſorts for delicacy of eating.

The proper time for ſowing the ſeed of either kind, for the purpoſe of Coleworts, is any time in July, for the autumn and winter crop; but to have them continued without running for ſpring drawing, ſome ſeed ſhould alſo be ſowed the beginning or middle of Auguſt, as obſerved of the Cabbages.

They

They are to be ſown in an open ſpot, and raked in, and when the plants have leaves two or three inches broad, tranſplant them where they are finally to ſtand, in rows a foot aſunder, and half that diſtance in the rows; all the culture they require is to have the ground hoed, to kill weeds, and looſen it about the plants; and when their leaves are as large as a man's hand, or thereabout, they are of due ſize to begin to draw as Coleworts.

In drawing the Coleworts for uſe, eſpecially the ſpring crop, where there is a large quantity, ſome draw every other row, permitting the intermediate ones to ſtand to cabbage, ſo cutting for uſe alſo every other one in the remaining rows, according as they form little hearts, leaving the others to cabbage more perfectly.

*Saving Cabbage-Seed.*

The common method to ſave Cabbage-ſeed, is to plant ſome of the full-grown Cabbages in autumn or beginning of winter in a dry ſpot, trenching them in down to their heads at two feet diſtance each way; or otherwiſe, either let a quantity of the ſtalks, after the heads have been cut occaſionally for uſe, remain, or tranſplant them to a convenient ſpot, to produce ſeed from their ſprouts, which anſwers the ſame purpoſe, but in this caſe no ſprouts muſt be gathered from theſe ſtalks; or inſtead of either of theſe methods, particularly to the ſummer Cabbages, you may ſlip a quantity of the forwardeſt ſprouts from the ſtalks in June, July, or early in Auguſt, in moiſt weather, and plant them twelve or fifteen inches diſtance, giving occaſional watering, they will readily take root.

In either of the above methods, the plants will all ſhoot up to ſtalk the following ſpring, flower in June, and perfect ſeeds in July or Auguſt.

It is neceſſary here to remark, that, in order to preſerve the reſpective varieties genuine, the moſt perfect of each ſort ſhould be marked when in full perfection, for without this precaution they will degenerate. Another thing of importance is, that if it is intended to ſave ſeed from more than one ſort, the different varieties ſhould be planted as far diſtant from one another as the extent of the garden will admit, to prevent as much as poſſible the communication of the farina of the different ſorts, which would fecundate each other, and the effect would be productive of a mongrel breed.

When the ſeed begins to ripen, watch the birds, which will attack it voraciouſly from every quarter.

As ſoon as it is fully ripe, which is very diſcoverable, cut the ſtalks off near the bottom, and after being expoſed a few days in the ſun to dry, let the ſeed be threſhed out upon cloaths, or a cloſe even floor, and ſpread it in a dry airy place a day or two to harden, then put it up in bags.

*Second Diviſion.*

[2]BRASSICA *Saubada*, the Savoy-Cabbage, or Savoy.

The Savoy is a variety of the Cabbage, though with care it will always retain its difference from ſeed; it admits of ſome varieties, all of which have finely curled leaves, and they head or cabbage to a large ſize, which are fine eating from Auguſt till March.

*The varieties are*] Common Green Savoy—Large Green Dutch Savoy—Yellow Savoy.

Theſe varieties are excellent for autumn and winter ſervice; they cabbage to fine handſome heads, which never grow hard nor crack, greatly excelling any other ſort of headed Cabbages for winter eating; and as they endure the froſt better, they are moſt profitable both for family uſe and the ſupply of markets during winter.

They are propagated by ſeeds ſown at two or three different times, that is, if intended to have Savoys as early as poſſible, it is proper to perform the firſt ſowing in Auguſt, as directed for the common Cabbages, or early in February, and another ſowing in March, and a third about the middle of April, by which practice you will have a fine ſucceſſion of large heads from about the middle of Auguſt to the end of winter; thoſe of the autumn-raiſed plants will be exceeding large, and in fine order for eating part of Auguſt, all September and October, which will be ſucceeded by the others in October and November, and which will continue through the winter, and part of the ſpring, till they run up for ſeed.

Each ſowing ſhould be in an open ſpot, and raked in, and when the plants have leaves an inch or two broad, and that, if they ſtand thick in the ſeed bed, it is proper to prick out a quantity of them three or four inches diſtance, to acquire ſtrength againſt the time for planting them out finally. Some of the autumn-raiſed plants may be planted out for good in October or November, or any time in winter, or beginning of ſpring; and the ſpring-raiſed plants are to be planted out occaſionally as ground is cleared, any time in May,

May, June, July, and Auguſt; thoſe planted out early ſhould be ſet two feet and half diſtance every way, and the next crop about two feet; but the latter plantations need not be planted more than a foot and half diſtance; all of which plantations ſhould be in open expoſures, the farther from trees, hedges, buildings, and the corners of gardens, the better, as the leſs liable they will be to the depredations of caterpillars, as is the caſe frequently with thoſe in cloſe ſituations.

It is cuſtomary to plant out the ſummer plantations of theſe plants between rows of forward beans, peas, kidney-beans, cauliflowers, early cabbage, and other crops that ſtand diſtant in rows, and are ſoon to come off the ground; by this practice ſome time is gained, though the plants are generally fineſt in the end, when they are planted in a clear ſpot of ground, previouſly dug for their reception.

In performing the ſummer plantations, it is of much advantage to chuſe moiſt weather for that work, otherwiſe watering muſt be practiſed ſeveral times till the plants ſtrike root.

All the culture they require, is to be hoed to kill weeds, and draw a little earth up to their ſtems.

To ſave Savoy-ſeed you may either plant down a quantity of the beſt ſorts in winter, or beginning of ſpring, or permit the ſtalks to ſtand, or tranſplant them to a convenient place to produce ſeed from their ſprouts, as obſerved of the common cabbage, which ſee.

*Third Diviſion.*

[3]BRASSICA *Fimbriata*, Fringed Cabbage, or Borecole, Scotch-Cole, and Common Coleworts.

The Borecole, and the other plants of this claſs, are all varieties of Cabbage of the open kind, or ſuch that never cloſe to form a head or cabbage, but always remain quite open and looſe to the heart, all of which poſſeſs ſuch a degree of hardneſs, as to bid defiance to the ſevereſt winter weather; ſo a few of them merits culture, to ſtand as reſerve in caſe of a ſevere winter cutting off the other greens.

*The varieties of Borecole are*] Green Curled Borecole——Red Curled Borecole—Thick-leaved Curled Borecole—Finely-fringed Borecole.

All theſe varieties of Borecole generally riſe with thick ſtalks a yard or more high, ſurmounted by a large head of thick leaves, ſpreading horizontally every way, which are finely fringed, and curled in a curious manner; and in the ſpring the ſides of the ſtalks are cloſely adorned from bottom to top with fine ſprouts, which, as well as the principal head, boil exceeding green, ſweet, and tender; and as they are extremely hardy, I ſhould adviſe, for the ſervice of a family, to cultivate a due quantity every year, to ſtand till towards ſpring, by way of reſerve, in caſe of a ſevere winter.

They are raiſed from ſeeds ſown in March, or beginning of April, in an open bed of good earth; the plants will riſe in a fortnight, or leſs time, a quantity of which ſhould in April, or beginning of May, be pricked out four or five inches aſunder, to remain ſix weeks; then plant them out finally into a fully open expoſure, in rows two feet diſtance.

Thoſe raiſed in March, and planted out early in ſummer, will advance with fine tall ſtems and large heads, and the advantage of their high ſtems is, they furniſh the greater ſupply of ſprouts, which come out cloſely on every ſide from the very bottom to the top.

To have good ſeed, mark ſome of the fineſt ſorts in winter, and let them remain entire; they will run up in the ſpring, and ripen plenty of ſeeds in autumn.

*Scotch-Cole, or Kale.*

The Scotch Cole is alſo an open Colewort, and ſort of brown Borecole, but ſome ſorts have more robuſt ſtems, larger heads, with large, broad, curly leaves, in ſome ſtanding erect, ſometimes contracting themſelves a little inward, but never cabbage. Of this ſort, however, there are ſeveral varieties, ſome red, ſome green, &c. and are fine eating in winter, requiring the ſame culture as the Borecole.

Of this kind are perennial varieties, with variegated leaves, preſerved in gardens as plants of ornament.

There are likewiſe perennial ſhrubby kinds of this ſort, riſing with tall branchy ſtems, adorned all the year with leaves, which in ſome ſorts are finely variegated, and are of many years duration; thoſe of them having variegated leaves make a pretty appearance.

All the ſorts are raiſed from ſeed; but the variegated kinds are continued by planting ſlips of them in ſpring.

*Common Green Colewort.*

This is a hardy, open, green plant, hath large plane leaves, generally always green, will

will grow large, but never contracts, or forms any head, like a cabbage, is a very hardy plant, and was formerly cultivated in every garden for winter greens, and is the original garden Colewort; but till ſeverely pinched by froſt, it is tough and rank-taſted, and, at any rate, never boils ſo fine and tender as the Cabbage Colewort, for which reaſon it is rarely cultivated now for table, except by the farming gardeners, who raiſe large quantities in fields for the ſupply of markets.

On account, however, of its hardineſs, it merits culture to ſtand till towards the end of winter, as a ſubſtitute, if the Cabbage Coleworts are cut off; in which caſe it may prove a neceſſary plant.

They are raiſed, for winter uſe, by ſowing the ſeed in July, as directed for Cabbage Coleworts, which ſee.

This ſort is frequently cultivated in fields for the feeding milch-cows in ſpring, for which purpoſe the cow-farmers about London uſed to raiſe vaſt quantities, ſowing the ſeed in July, and is ſometimes ſown where the plants are to remain, ſo hoeing them out to ſix or eight inches diſtance; but as the ground is ſometimes not cleared from other crops by the time the ſeed ſhould be ſown, it is then ſown thick in the corner or ſide of a field, and the plants are afterwards tranſplanted.

*Fourth Diviſion.*

[4]BRASSICA *Caulo-rapa*, Turnep-Cabbage.

This is a ſingular variety of Cabbage, having its ſtalk ſwelled globularly like a great turnep, and is crowned by a large tuft of leaves, which never cloſe or cabbage.

*There are two varieties.*] Turnep-Cabbage, with the turnep above-ground—Turnep-Cabbage, with the turnep under-ground.

The plants riſe and grow for ſome time like common cabbage-plants, after which the ſtalk of the firſt ſort begins to ſwell at bottom, and continues ſwelling upward, till by degrees the whole is ſwelled like a very large turnep, which, in the ſecond ſort, is almoſt wholly within the ground; both ſorts are crowned by a cluſter of open leaves, and they are ſometimes uſed as eſculents.

It is the globular or turnep-part of the plant that is uſed, being ſometimes ſliced in ſoups, and by ſome uſed as common turneps; but unleſs uſed when quite young, are intolerably rank and unpalatable, ſo are principally admitted in gardens as curioſities.

They are however recommended for culture in fields for feeding cattle, particularly ſheep; their chief merit is their hardineſs, as they will ſurvive the hardeſt winter.

They are propagated by ſeeds, ſown annually in March or beginning of April, and the plants are in May, or early in June, to be tranſplanted into an open ſpot, in rows two feet aſunder, keeping them clean from weeds, and draw a little earth about the bottom of the ſtem, and the turnep-part will be fully grown by Michaelmas, and continue all winter.

Or they may be ſown where the plants are to remain, and hoed out to a proper diſtance.

*Fifth Diviſion.*

[5]BRASSICA *Cauliflora*, *Cauliflora*, or the Cauliflower.

The Cauliflower, as we formerly obſerved, is ſuppoſed to be a variety, accidentally obtained from the ſeed of ſome of the ſorts of common cabbage, and brought to its preſent improved ſtate by the effect of diligent culture, which improvement was firſt of all obtained in the iſland Cyprus, from whence the ſeeds were introduced into the different countries of Europe; and our Britiſh gardens now boaſt the ſuperiority, by exhibiting the plants in greater perfection than moſt parts of the world.

There is however an apparent ſpecific difference betwixt the common *Braſſica* and the Cauliflower, both in their general growth and eatable parts; the cabbage hath broad, roundiſh, thick leaves, and when it ſhoots up ſtalks for flower and ſeed, riſes with only one main flower-ſtem immediately from the head, though it divides upward into many branches. In the *Cauliflora* the leaves are long, narrow, erect, and pointed, and when it ſhoots, riſes with many ſtems, each of which alſo divide into many branches. It is the leaves of the cabbage only that are uſed; but of the Cauliflower, the ends or buds of the flower-ſtalks; for the large, white, curdly head, in the centre of the plant, is only a compact collection of numerous buds, or ends of ſhoots, growing ſo cloſely together in a great round cluſter as to aſſume the appearance of one compact head, but which, as juſt obſerved, being compoſed entirely of the ends of numerous advancing ſhoots or flower-buds, they, after a certain period of growth, divide, and run up into ſtalks the ſame year for flower and ſeed; but while they remain compact and undivided as above, they are in perfection for eating.

*The Botanic Title and Deſcription.*

BRASSICA *Cauliflora*.

*The Cauliflora, or Cauliflower.*] Braſſica with

many branching flower-ſtems, riſing immediately from the head of the ſtalk.

*Varieties are*] Early Cauliflower—Late Cauliflower.

In reſpect to theſe two varieties, they are alike in their growth and ſize, only the early kind will come in about a week before the other, provided the true ſort can be obtained, of which however there is no depending, unleſs you ſave the ſeed yourſelf from the earlieſt ſorts, as is the practice of the London kitchen-gardeners, who are always in poſſeſſion of an early and later kind, of the former of which they are very choice.

Both the varieties are of a delicate temperature, being, for the general part, too tender to reſiſt the cold of our winter without the aid of occaſional ſhelter of glaſſes, &c.

*Their General Culture.*

The principal ſeaſon of Cauliflower is May, June, July, and Auguſt; however, by performing three or four different ſowings and tranſplantations, they may be obtained from May until near Chriſtmas.

The curious in Cauliflowers generally have three or four different crops annually, i. e. the early ſummer crop—main ſummer crop—late ſummer crop—and the autumn or Michaelmas crop.

The ſeaſons for ſowing the above different crops are,

1. The early and main ſummer crop is ſown about the twentieth of Auguſt, and the plants riſing the ſame ſeaſon, are to be pricked out and preſerved through the winter under bell or hand-glaſſes, frames, or in warm borders, &c. as hereafter directed, which being tranſplanted in ſpring, arrive at perfection the enſuing ſummer, ſome in May, but the principal crop in June and July, and ſome continue in ſucceſſion until Auguſt.

2. The late ſummer crop, to ſucceed the above, is ſown in February, or early in March, and planted out in May, as hereafter ordered, which come in for uſe in Auguſt and September, though they will be inferior to the former crop in ſize and beauty.

3. To have a Michaelmas or autumn crop, another ſowing is performed about the 24th of May, which being planted out in July, come in after Michaelmas, arriving to perfection gradually in October, November, and part of December; but the Cauliflowers of this crop are never ſo large, fair, nor perfectly headed as the ſummer crops; but as they are always acceptable, it is neceſſary to have them, and the London gardeners always raiſe great crops at that ſeaſon, which they commonly call Michaelmas Cauliflowers.

But we ſhall proceed to treat ſeparately of the culture of each of the above crops.

Firſt of the early and main ſummer crop.

As above hinted, the early and main ſummer crops are obtained from plants raiſed in autumn, and preſerved through winter under bell or hand-glaſſes, garden-frames, or in warm borders. The time for ſowing is, as before obſerved, ſome time between the 20th and 24th of Auguſt, though the London gardeners are punctual to the 21ſt day; for as they cultivate large quantities, have by long experience found that to be the moſt ſucceſsful period for ſowing this crop, which, if ſowed ſooner in autumn, many of the plants are apt to button, as they term it, in winter, or early in ſpring, that is, they run to flower in their infant ſtate, forming heads in the centre not larger than round buttons, ſo become uſeleſs; and if ſown much later, they will not acquire due ſtrength before winter, nor attain due perfection at the proper ſeaſon; mark therefore the time of ſowing, as above.

Great attention is neceſſary to procure good ſeed, ſuch that is not more than one year old, and that have been ſaved from the prime ſorts.

At the proper time, therefore, prepare a bed of the richeſt light earth in the full ground in a free expoſure, by digging it neatly one ſpade deep, and break the ſurface fine; then, directly, either ſow the ſeed on the ſurface, and rake it in even and lightly, or may firſt rake the ſurface ſmooth; then ſow the ſeed, and ſift light earth over it a quarter of an inch thick, or, after raking the ſurface ſmooth, may, with the back of the rake, ſhove the earth from off the ſurface equally, near half an inch deep into the alley, and then ſow the ſeed; then, with the teeth of the rake, draw the earth back again over the bed with a kind of jerk, to make it ſpread evenly in every part over the ſeed, and then with the rake lightly trim the ſurface ſmooth. Some adviſe ſowing this ſeed particularly upon old cucumber or melon-beds; there is no merit in this practice, ſince the ſeed will certainly grow better in a bed of good, rich, moiſt earth, in the full ground, than in the exhauſted mould of an old hot-bed.

If the weather proves dry, gentle waterings in an evening is neceſſary, which is eligible

eligible both before and after the plants appear.

The plants generally appear in a week or ten days; all the culture neceſſary is occaſional water and weeding until the latter end of September, when their leaves will be an inch or two broad; then it is proper to prick out a quantity of the beſt plants, in four feet wide beds of rich earth, in rows three or four inches diſtance, rejecting all crooked and black-ſhanked plants, and, as ſoon as planted, give a moderate watering, which, if dry weather prevails, muſt be moderately repeated; here let them remain until the end of October, or beginning of November, then muſt be tranſplanted into their winter quarters, ſome to be planted out finally under hand or bell-glaſſes for the earlieſt crop, ſee HAND-GLASSES; others into garden-frames, to be occaſionally ſhielded with glaſſes till ſpring, then planted out; or, in default of frames, ſome may be planted cloſe under a ſouth wall, where they will often ſurvive the winter tolerably well.

With reſpect to the earlieſt crop under hand or bell-glaſſes, as juſt mentioned, the following is their culture. In the end of October, or beginning of November, as above hinted, ſelect a plat of the richeſt ground in one of the beſt-defended quarters of the kitchen-ground; this ſhould be well dunged with that of old cucumber or melon-beds, and the whole then regularly trenched one good ſpade deep, burying the dung equally, then divide the ground into beds a yard wide, with foot-wide alleys between bed and bed, for the convenience of going in to raiſe, and ſet off and on the glaſſes, &c. this done, proceed to put in the plants, allowing three to each glaſs, though the London gardeners generally plant five, but if they all ſurvive the winter, two of the beſt is enough to be left to come to perfection; however, at the time of planting them under the glaſſes, ſelect for that purpoſe a quantity of the handſomeſt, ſtrait, clear-ſhanked plants; theſe being ready, ſtretch your line along the middle of the beds, and at every yard diſtance put in three plants in a triangle five or ſix inches apart, or, if you plant five, ſet one in the centre, and the others regularly round it; directly give a little water, and put on the glaſſes, which keep cloſe about ten or twelve days, when the plants will have taken freſh root; then prop them up on the ſunny ſide about three inches high with forked-ſticks, pieces of brickbat, or the like, but it is the moſt handy to have wooden pegs fifteen inches long, each having one or two notches to receive the edge of the glaſs, ſo ſticking them in the ground, one for each glaſs, and by which the glaſſes may be readily propped higher or lower on any ſide, as occaſion requires.

During winter, the glaſſes are to be kept almoſt conſtantly over the plants, obſerving, however, in mild weather, to keep them tilted on props, as above, on the warmeſt ſide, for the admiſſion of air, and in fine mild days it is proper to ſet the glaſſes quite off, which, if your plants are rather forward in growth, ſhould be practiſed at all opportunities, leſt, by too conſtantly glaſſing, it draw them into flower, but always put the glaſſes over the plants at night; when cutting winds and froſty weather prevail, keep the glaſſes cloſe down, only raiſing them in the middle of ſunny days, and when extremely ſevere froſt, keep them as cloſe as poſſible, and, for the greater ſecurity at ſuch times, it is eligible alſo to lay ſome long litter cloſe about the lower part of each glaſs, raiſing it higher as occaſion ſhall require, all of which precautions are to be occaſionally repeated from the time of planting them under the glaſſes until ſpring.

As to their ſpring culture, in the firſt place obſerve, that if all the plants under each glaſs have ſurvived the winter, they muſt be thinned the beginning or middle of March, for two ſtout plants under a glaſs is ſufficient finally to remain; though in large bell-glaſſes, the market-gardeners about London frequently leave three plants under each, for the ſake of having the advantage of the glaſſes to bring as many as poſſible to early perfection, which, though ſmaller than if but one or two, yet by coming in two or three weeks earlier than thoſe planted out, they ſell at double or treble the price; but where the ſize of the Cauliflower is a principal object, I ſhould adviſe to leave but two of the beſt plants at moſt under each glaſs, and tranſplant the others into another place the beginning or middle of March, according to the temperature of the ſeaſons, at which time a piece of rich well-dunged ground muſt be prepared to receive them; when this is ready, proceed to thin out the weakeſt plants as above, raiſing them with the point of a trowel, to preſerve the fibres of their roots, being careful not to diſturb, or leave any vacancy about the remaining plants, obſerving, if there are any deficiencies, to make them good, in the firſt place, with

ſome of the beſt of thoſe thinned out, and plant the reſt in the place prepared for them, two feet and half diſtance each way, and give ſome water to ſettle the earth about their roots; but in planting out theſe plants, it is cuſtomary with gardeners, who have occaſion to make the moſt of their ground, to ſow a crop of radiſhes and ſpinach on the ſame plat, as directed for the main ſummer crop.

The remaining plants under the glaſſes ſhould directly have the earth made good about them, and draw a little mould up about their ſtems, continuing to cover them occaſionally with the glaſſes, which muſt be raiſed conſiderably on props, in proportion to the advanced growth of the plants, not omitting to let the plants enjoy the benefit of the full air in mild days, alſo that of warm ſhowers, by ſetting the glaſſes wholly off.

Thus the glaſſes are to be continued occaſionally over the plants until the middle or latter end of April, or longer, if it ſhall ſeem neceſſary, either according to the growth of the plants, or temperament of the weather, obſerving, that when the plants are ſo far advanced that their leaves preſs againſt the glaſſes, theſe ſhould be raiſed, by forming a border or ridge of earth round each hole of plants three or four inches high, on which ridge of mould ſet the glaſſes, continuing to prop up one edge occaſionally, as before, and accordingly as the plants advance in growth, it is proper to prop up the glaſſes on every ſide three or four inches in height, for now, as the length of the days and warmth of the weather encreaſes, the plants will grow freely, ſo muſt have as much free air and ſcope to grow as it is poſſible to allow them under the glaſſes, at the ſame time being careful to expoſe them alſo occaſionally to the full air, as before obſerved, in fine days, and moderate warm ſhowers, but continue to defend them with the glaſſes on nights, and in immoderate cold rains, and all boiſterous weather, at leaſt until the weather becomes warm, and the plants are grown too large for the glaſſes, then let them by degrees be fully expoſed night and day, ſo that by the middle or latter end of April, the uſe of glaſſes may be wholly diſcontinued.

If the weather, toward the middle or latter end of April, and beginning of May, prove hot and dry, moderate waterings will be of utility in promoting the progreſs of the plants, as well as encreaſing their ſize and ſtrength; for it is of importance to have the plants as large and ſtrong as poſſible when arrived at full growth, otherwiſe we cannot expect them to produce large Cauliflowers.

About the middle of May ſome of the forwardeſt plants will probably ſhew flower, at which period examine your plants daily, and whenever a flower appears, turn down ſome of the inward leaves, to ſcreen it from the Sun's rays and free air, which would change it to a yellow hue, and occaſion the head to open before it attained its due perfection.

The excellence of a Cauliflower conſiſts not only in the ſize, but alſo in the whiteneſs and compact curdy-like growth of the head; ſuch that aſſume a frothy looſe appearance, are a degeneracy, and are in every reſpect inferior.

A Cauliflower is in its utmoſt perfection of growth when the outward parts of the circumference begin to open and expand, after which appearance the whole head ſoon divides, and ſhoots up faſt for flower and ſeed, therefore watch the opportunity, for a day or two often makes conſiderable difference.

In gathering the Cauliflowers for uſe, it is worth obſerving, that they eat conſiderably more criſp and ſweet when cut in a morning, though this is not always practicable in families, becauſe it is often the middle of the day before the gardener is informed what is wanted for the kitchen: they may either be cut off the ſtalk as it ſtands, or the whole plant may be pulled up; for, as the ſtalks never produce ſprouts like thoſe of cabbages, it is of no uſe after the main head is gone; they however muſt be diveſted of the root-end of the ſtalk before they are carried in to the kitchen or market; but if they are not to be immediately uſed, permit the whole ſtalk and leaves to remain, and lay them in a cool place till wanted.

Thus far for the culture of the bell-glaſs crop.

As to the culture of the main ſummer crop, which I before adviſed to be wintered in frames, &c. obſerve the following directions.

Theſe are deſigned to be protected all winter in frames, &c. in order to be planted out in the ſpring, to ſucceed the early crop which were finally planted out in autumn under the bell or hand-glaſſes; and even where there are no ſuch glaſſes, it is eſſentially neceſſary to raiſe a quantity of plants in autumn, as before directed, and pricked in garden-frames, to be occaſionally covered with the lights during

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ing winter, becauſe they will come in much ſooner than a ſpring-ſown crop; or, in default of frames, prick a quantity in a bed arched over with hoops to be covered with mats, for, although ſome may be planted cloſe under the bottom of a warm wall to take their chance, and will frequently ſtruggle through our ordinary winters, yet they are not always to be depended on, and, at any rate, they come in later, and rarely attain the ſize and perfection of thoſe occaſionally protected as above.

Therefore the plants being raiſed as before directed, proceed, in the end of October, or beginning of November, to prepare a bed or beds of rich light earth, in a dry ſunny ſituation, the width and length of one or more garden-frames, &c. fronting the ſouth, raiſing the ſurface a few inches above the common level, and rake the top ſmooth; then mark out the width of the frame, and prick the plants therein in croſs rows three inches aſunder, give a little water, and directly put on the lights, which keep conſtantly on eight or ten days, when the plants will have taken root, and muſt then be fully expoſed, in mild weather, to the open air. During winter, every day, in open weather, expoſe the plants fully to the free air, by ſhoving the glaſſes entirely off, which, however, ſhould always be put on a-nights; likewiſe in exceſſive rain, though if the rain happens in the day-time, and the weather is mild, raiſe the glaſſes on props three inches high, for the admiſſion of freſh air, for they muſt by no means be kept too cloſe in mild weather, leſt it force them into flower, as obſerved of the bell-glaſs crop, which would render them uſeleſs. In ſharp froſty weather the glaſſes muſt be kept always on, except in the middle of ſunny days, and the glaſſes ſhould be covered on nights with dry litter or mats; alſo if the froſt is very ſevere, lay long litter round the outſide of the frame. All decayed or yellow leaves ſhould be conſtantly picked off as they appear during their reſidence here. Towards ſpring innure them gradually to the full air, by leaving the glaſſes off occaſionally on nights as well as days, in open mild weather, ſo as that by the end of February, or beginning or middle of March, they may be hardened to be removed to the place of their final deſtination.

In default of frames, &c. as above obſerved, you may, at the before-mentioned time, prick a quantity of plants in a four feet wide bed in a ſheltered ſituation, which arch over with hoops or rods; ſo on nights and all bad weather cover with large garden-mats, and in ſevere weather alſo with litter.

Likewiſe in the above caſes of the want of frames, &c. a quantity may be pricked on a ſouth border cloſe under the wall, &c. and in default of other covering, they may be lightly covered in ſevere froſt with dry long litter, by which aſſiſtance the plants will often ſurvive the winter, and, at any rate, will come in earlier than ſpring-ſown plants.

In the latter end of February, or beginning or middle of March, according to the temperature of the weather, and condition of your plants, all thoſe wintered as above, either in the frames, arched bed, or warm border, are to be planted out, where they are finally to remain. Make choice of an open ſpot of the beſt ground, which ſhould be previouſly dunged and dug, as directed for the early crop, and in which plant the Cauliflowers by line two feet and half diſtance every way, and give water; but if it is neceſſary to make the moſt of your ground, a crop of radiſhes and ſpinach may alſo be raiſed on the ſame plat, which ſhould be mixed and ſown together broad-caſt, and raked in, before you plant the Cauliflowers. The radiſhes and ſpinach come in for uſe in May, and will be all gone by that time the Cauliflower-plants begin to advance conſiderably, when the ground ſhould be well hoed, and earth drawn about the ſtems of the Cauliflowers, obſerving, if the month of June proves very hot and dry, occaſional waterings will be of great utility, forming baſons round each plant for that purpoſe, and in July this crop will be in full perfection, continuing in ſucceſſion until the middle of Auguſt, when they will be ſucceeded by the late ſummer crop.

The culture of the late ſummer crop is,

In order to keep up a regular ſucceſſion of Cauliflowers through the ſummer, it is neceſſary to raiſe a due ſupply of plants in ſpring, to be planted out in the latter end of April, or in May, which will arrive at perfection in Auguſt and September, in due time to ſucceed the autumn-raiſed crop.

This crop may be ſown any time in February, but not later than the firſt week in March, and, in order to forward the plants as much as poſſible, it is proper to ſow the ſeed in a hot-bed of ſlender ſtructure; let the hot-bed be made for a one-light box about eighteen or twenty inches depth of hot dung, covered with light rich earth four or five

five inches thick; ſow the ſeed on the ſurface, and cover it a quarter of an inch deep with fine mould, put on the glaſs, and give occaſional light ſprinklings of water, raiſing the glaſs daily, for the evaporation of the ſteam, and admiſſion of freſh air, and the plants will riſe in a few days, at which time admit air freely by tilting the glaſs, and by taking it wholly off in fine warm days and moderate ſhowers, and in dry weather give frequent light waterings. When the plants have leaves an inch broad, it is proper to prick them out, and if ſome are then pricked upon another hot-bed of moderate temperature, it will forward them conſiderably. In default of frames, may ſow the ſeed and prick the plants on a hot-bed of the above ſubſtance, defended in cold nights and bad weather with mats or hand glaſſes; or, for want of a hot-bed, may ſow the ſeed, &c. on a warm border, and cover occaſionally, as above.

About the latter end of April, or beginning of May, ſome of the forwardeſt plants will be fit to tranſplant for good, which ſhould be in an open ſpot of rich well-dunged ground, as directed for the former crops, and in dry weather ſhould have frequent refreſhments of water till they have taken good root; their further neceſſary culture is only occaſional hoeing to kill weeds, and when the plants are ſomewhat advanced in growth, draw ſome earth about their ſtems.

The culture of the Michaelmas crop is,

To have Cauliflowers after Michaelmas, and to continue from October till near Chriſtmas, is, as already obſerved, effected by ſowing about the 24th of May on a bed of common earth, and when the plants have leaves an inch or two broad, prick them out three or four inches aſunder, to remain until the latter end of July, then tranſplant them finally, as directed for the other crops, ſupplying them occaſionally with water till rooted; they will begin to ſhew heads towards the end of October, which will continue coming in gradually all November, and if the ſeaſon proves mild, they often continue great part of December.

This crop depends greatly on the temperature of the autumn after Michaelmas, which, if moderately dry and warm, we often have tolerably large handſome Cauliflowers in November, but if very wet and cold, the heads, for the general part, are ſmall, irregular, ill-coloured, and inſignificant.

*Saving the Seed of theſe Plants.*

Every gardener who cultivates any conſiderable quantity of Cauliflowers, ſhould be particularly anxious about ſaving his own ſeed from the moſt perfect ſorts, as thoſe who ſave great quantities for ſale are not over careful in that point, which is the reaſon we often meet with ſo many irregular, ill-coloured, frothy, looſe, and other ſpurious kinds, in private gardens, to the great diſappointment of many gardeners.

Some of the earlieſt ſorts of the bell or hand-glaſs crop, are to be ſelected for ſeed, for thoſe of the ſucceeding crops are rarely forward enough to ripen any; the moſt perfect, largeſt, compact, firm white heads, are to be marked, and permitted to remain in the ſame place to run up to ſtalks, &c. which they will effect in July, when they will alſo flower, or in the beginning of Auguſt, and perfect ſeeds in September; obſerving, when the flower-ſtems are conſiderably advanced, to place three ſtakes triangle ways, for the ſupport of each plant, and by encompaſſing the ſtakes with pack thread, or other tying, it will effectually ſecure the ſtems, and all the lateral branches, in their due poſition, which is all the culture neceſſary, unleſs the weather proves very dry after the ſeed pods are formed, when ſome moderate waterings all over the plants will be very ſerviceable, not only in the growth of the ſeed, but alſo in preſerving it from the mildew, an infection which often attack theſe plants ſo ſeverely in their ſeeding ſtate, as either totally to deſtroy the greateſt part of the ſeed, or retard its growth ſo much, that it never ripens perfectly, and is the reaſon of good Cauliflower-ſeed being often ſo dear, which in the ſhops is frequently ſold from two to four ſhillings per ounce.

In the middle of September the ſeed will begin to ripen, though in cold wet autumns it is ſometimes Michaelmas before that is thoroughly effected, being watchful, however, to cut off the branches according as the ſeed ripens, for they do not all ripen together, ſo tye it in bunches, and hang it in the ſun to harden, then beat it out, and put it up in bags for uſe.

A freſh parcel of ſeed ſhould be ſaved annually, for this ſeed is not to be depended on when more than one year old, though two year old ſeed will frequently grow.

*Sixth Diviſion.*

[6]BRASSICA *Italica*, Italian *Braſſica*, commonly called Broccoli.

The Broccoli is another ſuppoſed variety of the common cabbage, though, if we admit of the cauliflower as a diſtinct ſpecies of *Braſſica*, the Broccoli is more apparently related

lated to that ſpecies than the cabbage, ſo that we have reaſon to ſuppoſe all the ſorts of Broccoli varieties of the *Braſſica Cauliflora*, as the plants, both in their general growth, habit, and eatable parts, greatly reſemble that ſpecies; for, as we obſerved of the *Cauliflora*, all the varieties of Broccoli form roundiſh heads in the centre of their leaves, compoſed entirely of a compact collection of numerous buds or ends of advancing ſhoots, and which, like the cauliflower, are the chief eatable parts of the plant; that being uſed while they remain compact and firm, are moſt excellent eating, but after having attained a certain ſtate of growth they divide, aſſume a ſeedy-like appearance, and ſoon fly up to ſtalks for flower and ſeed.

There are ſeveral varieties, all of which are cultivated principally for winter and ſpring eating, though the ſpring crops always attain the greateſt perfection, being productive of the largeſt and fineſt heads; but, as a regular ſucceſſion may be obtained from Michaelmas until May-day, and being the moſt excellent winter and ſpring vegetables of our gardens, their culture highly merits our niceſt attention, to obtain a regular ſupply during the above period.

All the varieties are hardy enough to reſiſt the cold of our ordinary winters, though very ſevere froſt often affects ſuch that are weak or grow in expoſed cold ſoils, but more particularly the ſort called Cauliflower-Broccoli.

The botanic title of Broccoli is,

BRASSICA *Italica*, the Italian *Braſſica*, by the Italians called Broccoli.

The principal ſorts, and their reſpective varieties, are,

[1]*Early Purple Broccoli.*] A moderate-growing darkiſh-green plant, producing ſmalliſh purple heads, but comes earlier by a fortnight or more than any other, and of which there are, the purple, the green, and the blue, all often riſing from the ſeed of the ſame plant; this ſort is proper for the firſt crop, which, if ſown the latter end of March, or beginning of April, and planted out in June, come in for uſe from Michaelmas till Chriſtmas, and when the heads are gathered, the ſtalks produce plenty of fine ſprouts of excellent eating.

[2]*Late Purple Broccoli.*] A large, robuſt-growing, darkiſh-green plant, producing a large purpliſh head like a cluſter of buds, being generally much larger and more perfectly headed than the former ſorts, and is very delicate eating, of which there are, the Common Purple-headed Broccoli—Blue Broccoli—Brown Broccoli—Green Broccoli—Yellowiſh Broccoli—all of which frequently riſe from the ſame ſeed, though that of the true purple kind is ſuperior both in ſize and perfectneſs of heading, as well as delicacy of eating, and with care in ſaving the ſeed, the ſorts may be continued, and this, and all its varieties, by ſowing in April, or early in May, and beginning of June, and planting out the plants in July and Auguſt, may be obtained for uſe from about Chriſtmas until the beginning or middle of May, but are always in greateſt perfection in regard to ſize in March and April; and after the main head is cut, the ſtalks exhibit abundance of ſide ſhoots or ſprouts, terminated by ſmall heads, which eat as ſweet and tender as the main ones.

[3]*White, or Cauliflower-Broccoli.*] A very curious variety of Broccoli. The plants are of robuſt growth, and lightiſh-green colour, forming fine white heads in the centre, ſometimes as large as a middling cauliflower, and greatly reſemble them in every ſtate of growth, and for delicacy of eating is equal to the fineſt ſummer cauliflower whatever. This ſort admits of no varieties, except in different degrees of whiteneſs, though the whiteſt generally aſſumes ſomewhat of a yellowiſh hue; that, by ſowing ſeed in April and May, and planting out the plants in June, July, and Auguſt, you will obtain heads for uſe all winter and ſpring; but thoſe that appear about March, and beginning and middle of April, are conſiderably the largeſt and faireſt heads. The ſtalks of this ſort rarely afford any ſprouts like the purple kinds.

[4]*Black Broccoli.*] A tall-growing plant of a blackiſh-green colour, which, for the general part produce ſmall and imperfect heads, being ſomewhat open and ſeedy-like, but poſſeſs this property of being ſo hardy, as ſeldom to be injured by the ſevereſt froſt. There are of this the Black or Dark-headed Broccoli, the Brown, and the Blue, all ſometimes from the ſame ſeed, and are proper to cultivate to ſtand the winter, by way of reſerve for ſpring ſervice, ſowing the ſeed early in May, and planting out the plants in July.

*Their General Culture.*

All the varieties are propagated by ſeed annually in the common ground, ſowing them in ſpring in an open ſituation, and the plants

to

to be tranſplanted into an open expoſure, as hereafter directed, to grow to perfection.

The principal ſeaſons for ſowing is March, April, and beginning of May, according to the time the plants are required for uſe; as for inſtance, if the heads are deſired in October, November, December, and January, it is proper to ſow ſome of the early and late purple kinds any time from about the 20th of March to the fifth of April; alſo at the ſame time may be ſown a few of the Cauliflower-Broccoli, by which you will obtain the greater chance of ſucceſſion and variety; the early purple will come in firſt, and they will be regularly ſucceeded by the others; but for the main ſpring crops, to come in for uſe in January and February, and continue in ſucceſſion until May, the ſeaſon for ſowing them is from about the fifteenth of April until the fifth of May, according to your ſituation and temperature of ſoil, and for which crops the late purple and Cauliflower-Broccoli are the principal ſorts; at the ſame time may alſo ſow ſome of the Black-Broccoli, to ſtand by way of reſerve, in caſe the others are injured by the winter's froſt; and if you would continue a longer ſucceſſion, a third ſowing may be performed the end of May, or beginning of June, particularly of the late purple and Cauliflower-Broccoli.

By obſerving the above different times of ſowing the ſeed, a ſucceſſion of Broccoli may be obtained for uſe from October until the middle of May.

The ſeed, as before obſerved, ſhould be ſown in an open expoſure, where the plants will riſe much ſtronger than on narrow borders, under walls, &c. ſow each ſort ſeparate, ſcattering the ſeeds moderately thick on the ſurface, and rake them in; the plants will come up in ten or twelve days; give occaſional waterings in dry weather, and when they have leaves an inch broad, it is proper to prick out a quantity of the beſt in a nurſery-bed three or four inches apart, giving water as ſoon as planted, and occaſionally till they have taken root, in which bed let them remain a month, or five or ſix weeks, where they will acquire due ſtrength, their ſhanks will be ſhort and of robuſt growth, and will hereby be conſiderably better prepared for tranſplanting where they are finally to ſtand, than thoſe which remain in the ſeed-bed.

The time for tranſplanting them where they are finally to remain, is June, July, Auguſt, and beginning of September, according to the time they were ſown, or are deſired for uſe.

The plants ſhould have an open ſituation, and as good ground as any the garden affords, which, if it has the addition of dung, will be a particular advantage, digging it in neatly one good ſpade deep, and directly put in the plants, for which work a moiſt time would be highly beneficial; they are to be planted in rows two feet and half aſunder, and about twenty inches diſtant in the lines; but for thoſe planted late, i. e. in Auguſt and September, two feet at moſt between row and row is ſufficient, and eighteen inches diſtant in the rows. Let them, as ſoon as planted, be watered, and if dry weather prevail, repeat the watering every other day, till the plants have got root, which work ſhould be particularly attended to in tranſplanting theſe plants.

After the plants have taken root and begin to grow, their further culture is to keep them clear from weeds, by hoeing the ground occaſionally, and when they have advanced a little in growth, draw ſome earth with an hoe about their ſtems, which work of earthing, if repeated, will be of ſingular advantage to the plants; it will promote their rooting more firmly in the ground, and encourage their progreſs of growth, and greatly forward them, ſo as to acquire due ſize and ſtrength before winter, which is very eſſential, for if the plants do not by that time arrive to a tolerably large growth, they will yield but ſmall and trifling heads.

Some of the earlieſt plants will probably ſhew heads for uſe in October and November, or perhaps ſooner, which however are rarely ſo large and fine as thoſe that appear towards, and after Chriſtmas.

Previous to gathering the Broccoli for uſe, attention muſt be had that the heads be permitted to have their full growth, which, however, ſhould be cut while they remain cloſe, and before they begin to divide and aſſume a ſeedy like appearance, and ſhould be cut with about ſix inches of the main ſtalk to each head; for the upper part of the ſtalk eats exceeding ſweet and tender, which, previous to its being dreſſed, muſt be peeled or diveſted of the outer rind, and which, when dreſſed, as well as the heads themſelves of the Purple and Black-Broccoli, always aſſume a fine green colour; but the Cauliflower-Broccoli retains its natural whiteneſs, which ſhould be boiled in a clean linen cloth, as practiſed to

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cauliflower, and ſhould be ſerved up to table in the ſame manner.

After gathering the main heads of all the ſorts of Purple and Black Broccoli, the ſtalks ſhould be permitted to remain for the production of ſprouts or ſmaller heads, which they will afford plentifully, and which are as fine eating as the principal heads; but as to the Cauliflower-Broccoli, the ſtalks afford but very few ſprouts or ſide-ſhoots.

To ſee Broccoli in high perfection from the earlieſt to the lateſt period, we muſt review Covent-garden and Newgate-markets, in London, early in a morning from October until May, there we may ſee the production of numerous different gardeners brought in great quantities, all bound up in bunches by their ſtalks, from ſix to twelve heads in each bunch, thoſe of the purple ſorts all diveſted of their leaves, the cauliflower kinds with the leaves on, but which are trimmed down to the head in the manner of cauliflowers, and both of which ſorts are there ſold from about three or four to eight or ten ſhillings per dozen of bunches, according to the ſize and quality of the heads.

*Of ſaving the Seed of the different Sorts.*

When it is intended to ſave the ſeed of Broccoli, ſome of the largeſt and moſt perfect heads of the reſpective ſorts of thoſe which appear in February or March ſhould be marked when in perfection, which, of the firſt and ſecond ſorts, thoſe only of the beſt purple colour and cloſe knobby-like heads ſhould be ſelected; and of the cauliflower or white ſort, thoſe that have the largeſt, cloſeſt, and whiteſt heads, are to be choſen; and of the black kind, always chuſe thoſe with the largeſt, moſt compact, and darkeſt-coloured heads; all of which ſhould remain untouched, only taking off the ſide-ſhoots, ſo leaving only the principal head to ſhoot up for ſeed.

To preſerve the principal varieties as pure in their kind as poſſible, the ſeeding plants of the different ſorts ſhould be at a conſiderable diſtance, leſt they fecundate each other, and occaſion a degeneracy.

Thoſe perſons who cultivate purpoſely for ſeed, ſhould ſow in the end of April or beginning of May, and plant them out in July; and the following ſpring, when they ſhew their heads, pull up all thoſe that are degenerated, or vary from their reſpective kinds, which ſhould be punctually attend to, otherwiſe it will be impoſſible to preſerve the ſorts.

All the ſorts generally ripen ſeeds as plentifully as any of the ſorts of cabbages.

The plants generally run up to ſtalk in April or May, flower in June, and the ſeed ripens in Auguſt, which is to be managed as directed for that of cabbages, ſavoys, &c.

*Seventh and laſt Diviſion of Braſſica.*

[1]BRASSICA RAPA, the Turnep.

The Turnep, as we have already obſerved, is a diſtinct ſpecies of *Braſſica*, or Cabbage, which till lately was always ranged as a ſeparate genera, under the title of *Rapa*; but its general characters being the ſame as *Braſſica*, modern botaniſts have now ranged it as a ſpecies of that genus.

Claſs, order, and characters, the ſame as *Braſſica*.

The botaniſts allow but one diſtinct ſpecies, but which admit of ſeveral eminent varieties, all of which are annuals, as, if ſown early in ſpring, they attain perfection, run up to flower, ripen ſeeds, and totally periſh the ſame year.

The ſpecies is,

BRASSICA *Rapa*.

*Rapa, the Turnep* ] Braſſica with a large, orbicular, depreſſed, fleſhy root, crowned by many long rough leaves, and when the plant ſpindles, riſes with a ſtrong erect ſtem three or four feet high, dividing into many branches, covered with numerous yellow flowers in May and June, ſucceeded by plenty of ripe ſeed in July or Auguſt.

Varieties of this are,

[1]*Early Dutch Turnep.*] An orbicular, moderate ſized, handſome, white Turnep, valuable for its early perfection, very ſweet and tender while young, and a very fine garden Turnep for the early and ſummer crops, though when old it is apt to become ſtringy.

[2]*White Round Turnep.*] A globular, large, white Turnep, proper both for the garden and field culture, and ſucceeds the Dutch ſort in its time of attaining perfection.

[3]*Green-topped Turnep.*] A large round Turnep, remarkable for having its outer coat green at top, and great part of the root growing above-ground; is exceeding tender and palatable eating at almoſt every period of its growth, obtaining in ſize from about four to eight or ten inches diameter, though, when allowed conſiderable room to grow, it often arrives at a much greater magnitude, and is excellent for the general crop in gardens, as well as that of field-culture for feeding cattle.

[4]*Red-topped Turnep.*] A large globular Turnep, having its outer ſkin red at top; a fine,

ſoft, ſweet-eating root; and as it acquires a very large ſize, is alſo particularly well adapted for field-culture.

[5]*Yellow Dutch Turnep.*] A moderately large, and frequently oblong Turnep, the ſkin and fleſh of a yellow colour; is tolerably ſweet and palatable eating, though the colour renders them diſagreeable to ſome, whilſt others eſteem them equal to any of the other varieties for the table.

[6]*Oblong White Turnep.*] An oblong, largiſh, white Turnep; ſtrikes conſiderably into the ground, often aſſuming the form of ſome parſneps; boils ſoft and ſweet while young, but ſoon becomes ſtringy and rank-taſted.

[7]*Long-rooted French Turnep.*] A long, ſmall, ſpindle-rooted Turnep, of but little merit except for ſoups, and ſhould be uſed while young, otherwiſe it becomes ſtringy and hard.

[8]*Purple Turnep.*] A roundiſh, ſmall, early, purple-coloured Turnep, conſidered more as a curioſity, than for any œconomical purpoſes.

Of the above varieties, the firſt four are thoſe of moſt merit, the firſt of which demands notice for the early ſummer crops for family ſervice, they generally arriving to perfection a fortnight, at leaſt, ſooner than any of the other varieties, and may be obtained ſo early as the middle of May, at which time, or when the root attains the breadth of a ſhilling or a half-crown piece, they are alſo eſteemed by many to eat raw, either alone, or as an ingredient in the compoſition of a ſallad, ſerving them to table with part of their green tops entire, as alſo the long fibre or tail of the root; and for culinary purpoſes they may be continued in great perfection all ſummer, by performing three or four different ſowings from March until July, ſo as to have crops of young roots ſucceed one another regularly; but for the autumn and winter crops, the white round Turnep, the green-topped, and the red-topped kinds, are the hardieſt and very fine family Turneps, though the green-topped ſort claims precedence for ſweetneſs of eating, as well as durability of perfection; likewiſe, as the three laſt-named varieties attain conſiderably the greateſt magnitude, they are to be preferred to all the others for field-culture, for the feed of ſheep and black cattle in winter and ſpring; and for the general ſupply of table in autumn and winter, it is eligible to cultivate a good crop of the white-round, or green-topped kinds, &c. by ſowing at the ſeaſons hereafter directed.

Turneps may be obtained for uſe eight or ten months in the year, that is, from about the middle of May, until the beginning or middle of March, after which time they begin to ſhoot up into ſtalk for ſeed; and although the roots are often continued for uſe until the latter end of April, yet they, after the month of March commences, ſoon ſhoot, become ſtringy, dry, hard, and very indifferent eating for the table.

*General Culture.*

The propagation of all the varieties is by ſeed in an open ſituation, in the place where the plants are to remain, for they are never tranſplanted like the preceding ſpecies of *Braſſica*.

The ſeaſon for ſowing is any time from the beginning of March until the latter end of July, though to have a long and regular ſucceſſion for the table from the earlieſt to the lateſt period, it is neceſſary to perform four or five different ſowings, at leaſt, at proper intervals, from the middle of February until the middle of Auguſt, obſerving it is not adviſeable to ſow earlier than the middle of February, becauſe the too early ſown plants would fly up to ſeed the ſame year before the roots apple, or, at leaſt, attain a quarter their uſual ſize; indeed, even thoſe ſown any time in February are very apt to run; but thoſe ſown in March more generally ſtand, and all thoſe ſown after that time, as in April, May, June, &c. never run till the ſpring following: and as to the latter crops, none ſhould be ſown much later than the middle of Auguſt, as above noticed, by reaſon the roots will not have time to grow to any tolerable bigneſs before the winter's cold puts a period to their growth; it is however proper to ſow late as well as early for family uſe, that, although the roots will not acquire any conſiderable ſize, they being reſerved for ſpring, ſtand three or four weeks longer before they run, than thoſe of the ſummer crops, by which means we obtain them ſo much the longer for the table.

But for the general ſummer, autumn, and winter crops, the principal periods for ſowing is April, June, and beginning of Auguſt, as before obſerved, though, where a conſtant ſupply of young roots are required, ſowings may be performed in any of the intervals between theſe times, or thoſe before-mentioned.

An open ſituation, and a moderately light ſoil is the moſt eligible for the culture of Turneps; as, in confined places, they draw up greatly to tops, and form but inconſiderable roots, and in ſtrong land the roots frequently acquire a ſtringy texture, and rankneſs of taſte.

The neceſſary ſpace of ground to ſow at a time for the ſupply of a family, is from about two to ſix, eight, or ten rod, making the calculation according to the extent of the family.

The proper quantity of ſeed is at the rate of about two pounds to an acre, ſo the calculation is eaſily made for a ſmaller or larger extent of ground.

The ground is to be prepared for the ſeed, by digging or trenching it one ſpade deep, and the ſeed ſhould, if poſſible, be ſowed while the ground is freſh ſtirred, eſpecially in ſummer, when it is hot or dry weather, but a moiſt ſeaſon for ſowing is of great importance in the culture of Turneps, for reaſons hereafter explained: the ſeed is to be ſown broad-caſt on the ſurface, ſcattering it moderately thin with a regular caſt, and even-ſpreading hand, and directly tread it in evenly, and rake the ground; thus far is the method of ſowing Turneps in gardens; but in the field culture the plough, harrow, and roller, is uſed. See the *Field Culture*.

This ſeed being of quick germination, the plants appear in a few days after ſowing, eſpecially in moiſt weather; and in eight or ten weeks after they appear, we may expect Turneps fit to draw.

As we above obſerved, a moiſt ſeaſon is of great advantage in ſowing Turneps; it promotes a quick germination in the ſeeds, and free growth in the young plants; for when they come up freely, and continue a luxuriant growth, it ſecures them from the fly, which, in very dry weather, when the plants riſe ſtraggling, and grow ſtuntedly, while in the ſeed leaf, often proves a mortal enemy to theſe crops, frequently deſtroying whole fields of them in a few days; but when the weather is ſhowery at their firſt appearance, the plants advance ſo faſt in growth as ſoon to be in the rough leaf, and after they begin to advance in the rough leaves pretty ſtrongly, they may be conſidered to be paſt danger; ſo that the greateſt danger is the firſt week or fortnight after the plants come above ground, therefore in gardens, where there are only ſmall quantities, it will be highly beneficial to water them plentifully at that period of their growth. Many receipts have been recommended to prevent the attacks and devaſtations of this common enemy to our Turneps, ſuch as ſteeping the ſeed, previous to ſowing it, ten or twelve hours in water, wherein has been boiled or infuſed a good quantity of tobacco-ſtalks and duſt, mixing therewith flour of brimſtone, ſoot, juice of hepatic aloes, &c. alſo by ſtrewing ſoot or lime over the ground after the plants come up, which expedients frequently have ſome effect, though far from being infallible, for, in ſpite of all the methods, the fly will often devour whole crops, if ever ſo conſiderable; and when this is the caſe, nothing more can be done than to prepare the ground, and ſow it again as ſoon as poſſible.

As to the general culture of Turneps, the plants, as before obſerved, are always to remain where ſown, and all they require is, when about a month old, to be thinned to from about ſix to twelve or fifteen inches diſtance, and cleared from weeds, which work of thinning, &c. is the moſt effectually done by the hoe, and is called hoeing Turneps.

This work of hoeing Turneps is to be performed when the plants have two or three leaves about an inch broad, which ſhould always be done in dry weather, ſee HOEING, having a common large hoe five or ſix inches broad, with which cut down the ſuperabundant plants, ſingling out the others to about eight inches diſtance, though, if the turneps are to ſtand to grow to full ſize before any are drawn, they ſhould be thinned to a foot diſtance at leaſt; at the ſame time cut down all weeds, and ſtir every part of the ground, for this is highly beneficial to the growth of the plants, and if the work is duly performed in dry weather, that the weeds, &c. cut down be more effectually deſtroyed, the plants will require no further culture; for they, after the operation of hoeing, will advance ſo faſt in growth, that their leaves will ſoon ſpread and cover the ground, ſo as to ſtop the future progreſs of weeds. With reſpect to the above diſtances of thinning the Turneps, it is principally to be underſtood of ſuch that you intend ſhall grow to a tolerably large ſize before any is drawn; but as to the earlieſt crop, they need not be thinned to more than five or ſix inches diſtance, eſpecially if it is intended to begin drawing them as ſoon as they begin to turnep, as by many practiſed, gradually thinning out the largeſt

for uſe; obſerving, however, always to thin them regularly at firſt, as above, at the time of hoeing.

In three or four weeks after hoeing, the plants will begin to turnep, and in five or ſix ſome will be fit to draw young for uſe, but it will be two months from hoeing before they attain tolerable perfection, though, as above obſerved, we often begin drawing the earlieſt crop as ſoon as the root begins to turnep, which, although not larger than middling walnuts, are always highly acceptable at an early ſeaſon, as a rarity at table; they alſo ſell well at market, and thoſe of London are generally ſupplied with them ſo early as the beginning of May.

The quantities of theſe roots conſumed for family uſe almoſt the year round in London and its vicinity are amazing, when we ſurvey the vaſt crops in the extenſive garden-grounds and fields eight or ten miles round the metropolis; alſo Covent-garden, and the other gardener's markets of that city, early in a morning, to ſee the prodigious quantities that are daily brought by cart and waggon-loads, all clean waſhed and neatly bunched, from about twelve to fifteen or eighteen, &c. according to their ſize in each bunch, and which the gardeners ſell to the retailers by the dozen of bunches, generally from one to two ſhillings per dozen.

*Of the Field Culture.*

In the field culture of Turneps for autumn and winter ſervice, either for the ſupply of markets or for feeding cattle, the common ſeaſon for ſowing is any time from the beginning of June till the middle of Auguſt.

The ground is to be prepared for the ſeed by proper ploughing, and ſhould alſo be once or twice well harrowed, to render the ſurface level and fine, that the ſeeds, when ſown, may be more equally covered; the ſeed is then to be ſowed immediately, allowing not more than a pound and half or two pound to an acre, ſowing it by broad-caſt, and directly harrow it in with a ſhort-tyned harrow, and afterwards roll the ground with a large wooden horſe-roller to ſmooth the ſurface, and the ſeed will thereby be covered more effectually, the plants will riſe more regular, and will be much eaſier to hoe them, than if the ſurface is left rough.

When the plants have leaves an inch or two broad, they are to be hoed in dry weather, to deſtroy weeds, and thin the plants to twelve inches diſtance, as before obſerved; but when it is deſigned the roots ſhall grow to their utmoſt ſize for feeding cattle, it is proper to ſet them out to about fifteen inches diſtance at leaſt.

The crops of the above times of ſowing come in for uſe in September, October, and November, and continue good all winter, either for the table, or for feeding, at which time they are admirable food for ſheep and cattle, and are excellent for milch-cows, for which purpoſe the cow-farmers about London uſe vaſt quantities, many of whom have ſeveral hundred cows, but as their land conſiſts chiefly of graſs, they buy whole fields of them of the ploughing farmers ten or fifteen miles round the city, and bring them home in waggons, and give them to the cows whole, which they eat greedily, to the great encreaſe of the quantity of their milk.

*Saving the Seed.*

To ſave Turnep-ſeed, a due quantity of the roots of the autumn or winter crops may be permitted to ſtand where they were raiſed, and they will ſhoot up in March, and produce plenty of ſeed in June, July, or Auguſt, without further trouble; but if you are curious to preſerve the different varieties in as great perfection as poſſible, it is adviſeable in February to tranſplant a quantity of the fineſt roots of each ſort in ſeparate pieces, at a diſtance from each other, placing them in rows two feet aſunder, and the neceſſary culture is, to hoe the ground occaſionally to deſtroy weeds, and to watch the birds when the ſeed begins to ripen, which will be in June or July, and ſome time in theſe months, or beginning of Auguſt, will be fully ripened, when the ſtalks ſhould be cut up from the bottom, and after it has been expoſed to the ſun a few days to dry and harden, threſh it out, and put it up in bags for uſe.

BROMELIA, *Bromelia*, comprehending alſo the ANANAS, or Pine-Apple, and the PINGUIN, or Wild Ananas.

This genus comprehends moſt curious exotics for the hot-houſe, herbaceous perennials of robuſt aloeaceous-like growth, riſing with numerous, long, erect, ſharp-pointed leaves from the bottom; in the midſt an erect ſtalk from one to three feet high, crowned by oblong ovaliſh fruit; and that, being natives of the hot parts of Africa and America, they conſequently, in this country, require the conſtant ſhelter and temperature of our beſt ſtoves.

Claſs

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX, a ſmall, trigonous, three-parted, permanent cup. COROLLA, three narrow erect petals, having at the baſe a three-parted nectarium. STAMINA, ſix ſhort filaments, inſerted into the receptacle, crowned by ſagittated antheræ. PISTILLUM, a germen below the receptacle, and filiforme ſtyle, ſurmounted by an obtuſe bifid ſtigma. PERICARPIUM, a large, roundiſh, umbilicated, baccaceous fruit, furniſhed with numerous, ſmall, oblong, obtuſe, ſmooth ſeeds, which in the Ananas are lodged in the knobs or tubercles of the fruit.

There are of this genus four or five ſpecies, the principal of which is that celebrated plant the Bromelia Ananas, which produces the ſo much admired fruit the Pine-Apple, and which now conſtitute the principal furniture of moſt of our hot houſes, for the ſake of the ſaid fruit, which certainly deſerves the appellation it has univerſally obtained, that of king of fruits, as, in beauty, delightful fragrance, and deliciouſneſs of taſte, it greatly ſurpaſſes all other fruits of the world.

The ſpecies are as follow: and firſt of the Pine-Apple and varieties.

[1]BROMELIA *Ananas.*

*The Ananas, or Pine-Apple Plant.*] Bromelia with a thick, fibry, perennial root, crowned by many long, erect, ſharp-pointed, ſerrated, prickly leaves, growing two or three feet high; from their centre a robuſt round ſtalk, ſupporting at top a large, oval, erect fruit, compoſed of numerous tubercles, and beautifully adorned at top with a crown of leaves, and blueiſh flowers, riſing ſingly from all the knobs or tubercles, and as the flowers fade the fruit enlarges, becomes a fleſhy ſubſtance, and as it ripens, aſſumes a golden colour, imparting a moſt fragrant odour.

Of the above ſpecies are ſeveral varieties, differing in the ſhape, ſize, and colour of their fruit, &c.

*The varieties of note are*] 1. Oval-ſhaped Pine-Apple with whitiſh fleſh, or Queen-Pine——2. Pyramidal, or Sugar-loaf Pine-Apple with yellow fleſh—3. Green Sugar-loaf Pine-Apple—4. Black Antigua, or Ripley Pine-Apple——5. Shining green-leaved Pine with ſcarce any ſpines, and with large fruit, or King Pine—6. Granada-Pine with marbled leaves and very large fruit—7. Bogwarp-Pine with broad green leaves——8. Smooth, long, narrow-leaved Pine——9. Gold-ſtriped-leaved Pine——10. Silver-ſtriped-leaved Pine.

Of the above varieties there are two principal ſorts in eſteem amongſt us in England, which are the two firſt-mentioned, viz. the Oval Pine-Apple, and the Pyramidal, or Sugar-loaf Pine-Apple, the latter of which is ſuperior to all the others in flavour, and is diſtinguiſhable by having the inner ſide of the leaves marked with purple ſtripes. Several of the other ſorts are alſo cultivated in many of our curious ſtoves, both for the ſake of the variety of their leaves, as well as that of their fruit, all of which attain due ſize, and ripen freely in our hot-houſes, though preference is generally allowed to the two firſt varieties. As to the two ſtriped-leafed kinds, i. e. the Gold-ſtriped Pine, and Silver-ſtriped ſort, are the moſt rare of any ſort in England, and are eſteemed principally for the ſingularity of their ſtriped leaves.

The four following ſpecies, not producing fruit of any conſideration, are only cultivated in ſome curious hot-houſes, for the ſake of variety.

[2]BROMELIA *Pinguin.*

*Pinguin, or Wild Ananas.*] Bromelia with many long, ſharp-pointed, prickly leaves from the bottom, and in the centre riſes an upright ſtalk a yard high, terminated by a cluſter of very ſmall fruit, reſembling a Pine-Apple.

[3]BROMELIA *Karatas.*

*Karatas, or Acaulis Wild-Pine.*] Bromelia with many very long narrow leaves from the bottom, ſtrongly armed with ſharp crooked thorns; and in the midſt of the leaves riſe a cluſter of fruits near the ground, each about four inches long, and one broad; ſomewhat reſembling the Pine-Apple.

[4]BROMELIA *Pyramidata.*

*Pyramidal Bromelia.*] Bromelia with many long, erect, aloe-like leaves, immediately from the root, ſharply indented and armed with thorns; and in the centre iſſues a ſtalk a yard high, adorned below with entire leaves, and above with flowers, forming a looſe ſpike, ſucceeded by ſmall oval fruit.

[5]BROMELIA *Lingulata.*

*Lingulated Bromelia.*] Bromelia with many erect leaves from the root, narrow at their baſe, widening gradually to the top, and with ſerrated ſpinous edges; and in the midſt of them the ſtalk, dividing into branches, ſuſtaining alternate ſpikes of cloſe-ſitting flowers, ſucceeded by ſmall, oval, pointed fruit.

Theſe

These four ſpecies are propagated by ſeed; alſo by ſuckers like the Ananas, and muſt always be kept in the ſtove.

*Culture of the firſt Species Bromelia Ananas, or Pine-Apple.*

The *Bromelia Ananas*, or Pine-Apple, and all its varieties, are herbaceous perennials of the evergreen kind, being perennial not only in root, but alſo in foliage, ſo may be ſaid to be herbaceous evergreens; and that being raiſed from ſeed, ſmall ſuckers, or the crown at top of the fruit, they, until arrived at a fruiting ſtate, conſiſt principally of an erect cluſter of long leaves ſtanding on the crown of the root, the whole plant encreaſing in ſubſtance and ſtature about two years, when they commonly produce ripe fruit, each plant one, appearing firſt in the centre of the leaves, generally in ſpring, crowning a robuſt ſtalk, which, as well as the fruit, grow perfectly erect, gradually advancing in height, and the fruit increaſing in magnitude till July, Auguſt, or September, then acquires maturity, obtaining in ſize, from about three or four to ſix or ſeven inches length, and three or four diameter, always crowned at top with a beautiful tuft of erect leaves called the crown, ſerving not only as an ornament to the fruit, but alſo for propagation; at the ſame time alſo of perfection of the fruit, the plants always emit ſuckers or off-ſets, for the like purpoſe of propagation, iſſuing both from between the leaves at bottom, and juſt under the baſe of the fruit, after which the old plants, becoming uſeleſs for fruit-bearing, may be preſerved as ſtools, to produce ſuckers; ſo that a ſucceſſion of young plants is always annually raiſed for fruiting, which is effected with great facility by the above-mentioned crowns and ſuckers: theſe being planted ſeparately in pots plunged in the bark-bed in the hot-houſe, &c as hereafter directed, where they ſoon ſtrike root and grow freely, or may even be ſtruck in a tan or dung hot-bed, made in a pit under a deep frame, or in hot-beds under a common cucumber or melon-frame, and afterwards removed to the ſtove to remain to come to perfection; though the plants are by ſome reared by the benefit of tan or dung hot-beds only, under a deep glaſs frame, hereafter deſcribed; but their culture is generally effected with greater facility and certainty in a hot-houſe, having the aid of bark-beds and occaſional fire-heat.

The appellation, Pine-Apple, given to this plant, is from the reſemblance of the figure of the fruit to the cone or fruit of the Pine-tree. See CONUS and PINUS.

This plant being a native of ſome of the hotteſt parts of Africa and South-America, in this country it requires the continual temperature of a hot-houſe, having the conſtant aid of bark hot-beds, &c. aſſiſted occaſionally in winter by actual fire, or in ſome ſuch glaſs departments, where we can employ ſuch artificial aids of heat, as ſufficiently to imitate the temperature of the native climate of this plant, which by many is now ſo well effected in our ſtoves, as to raiſe the fruit in almoſt as high a degree of perfection as it uſually attains in the above hot countries where it naturally grows.

It is raiſed in great abundance in moſt parts of the Britiſh Weſt-Indies, and moſt other of the hot parts of America, where the plant grows freely at all times in the open ground, and from which country we were formerly ſupplyed with many young plants; but our hot-houſes being now plentifully ſtocked with them, furniſh conſiderably better plants than any procured from thence; for thoſe we receive from that country are often collected from good and bad ſorts indifferently, and theſe frequently almoſt periſhed through the length of the voyage and ill-management; ſo that the practice now of procuring plants from ſo great a diſtance is hardly worth the trouble, unleſs for the ſake of ſome valuable new variety that ſhall happen to be diſcovered.

Holland was the firſt European country where the culture of this plant was attempted, and the temperature of heat diſcovered to bring it to a proper fruiting ſtate, and from which country we here in England were ſupplied with the firſt plants and hints for its culture, in which we have ſo greatly improved as to equal, if not excel, all other countries of Europe.

The principal ſeaſon of obtaining this fruit in perfection in England is from June until October, they generally ſhewing fruit in February or March, which advances gradually to perfection, acquiring maturity at different times, for the fruit of the ſame time of appearance are often a month or ſix weeks difference in their times of ripening; but the time of their greateſt perfection is Auguſt and September, though ſome plants being ſo backward in ſhewing fruit, that it ripens ſtragglingly in winter, and even ſome not until ſpring;

ſpring; but their flavour is inferior to that ripened at the afore-mentioned times; ſo that in their culture we ought to promote their ſhewing fruit only in ſpring, that they may have the ſummer to effect their growth, by which they will obtain their due ſubſtance, beauty, and deliciouſneſs of flavour.

*Of the Hot-houſe or Stoves, &c. wherein to raiſe them.*

Having before obſerved, that to cultivate theſe plants in England, or any part of Europe, they require the conſtant accommodation of hot-houſes; with reſpect therefore to theſe departments, requiſite particularly for theſe plants, it is further neceſſary to remark, that to effect their culture more commodiouſly, and ſo as to be well ſupplied with proper fruiting plants annually, it is proper to be furniſhed with two orders of ſuch hot-houſes or ſtoves; a ſmaller one to raiſe the plants, and a larger one to fruit them, each having a cavity or pit within-ſide the whole length, ſix or eight feet wide, and three deep, wherein to make the bark-bed, i. e. a hot bed formed of tanner's-bark, in which to plunge the pots containing the plants; for this kind of hot-bed is moſt neceſſary in the culture of pines, and each of which departments to be alſo provided with flues, in which to make occaſional fires in winter. See HOT-HOUSE.

The former of theſe departments, i. e. the ſmaller ſtove, is by gardeners ſometimes called the pit, ſee BARK-PIT; or if of a more capacious dimenſion, the ſucceſſion-houſe; and its uſe is by way of a nurſery-ſtove to the main ſtove or fruiting-houſe, it being deſigned ſolely for the reception and rearing the young plants, that is, the crowns and ſuckers beforementioned, which being planted ſingly in ſmall pots in autumn, as hereafter directed, are plunged in the bark-bed of this ſmall ſtove, to remain about a year, or until they attain a proper ſize and ſubſtance for fruiting, without encumbering or taking up the room in the principal fruiting-ſtove juſt-mentioned, by which means you will be able to fruit many more plants therein, than if the young and old were crowded together in the ſame department; beſides, you can regulate the heat in this nurſery-ſtove as the plants ſhall require, for they muſt not be much forced in their infant ſtate, leſt it drive them unſeaſonably into fruit, which, if it happens when the plants are leſs than fifteen or eighteen months old, the fruit, beſides coming at an untimely ſeaſon, will be ſmall and trifling; ſo that the intention is to rear the plants in this nurſery-ſtove till they are a year or two old, when they will be nearly full-grown, or, at leaſt, moſt of them will have acquired ſuch ſize and ſtrength, as to be capable of producing tolerably large fruit, and are then to be removed in autumn in their pots to the main or fruiting-ſtove.

And as to the fruiting-ſtove juſt mentioned, it is intended principally for fruiting the plants, after being reared from crowns and ſuckers in the nurſery pit or ſucceſſion-ſtove a year or two, till they obtain the ſize or bearing ſtate above-mentioned, which being removed in their pots the beginning or middle of October to this main or fruiting-ſtove, and plunged in the bark-bed thereof, where, by the management hereafter directed, they commonly ſhew fruit the ſpring following, and which gradually arrive to perfection the enſuing ſummer and autumn.

For the proper dimenſions of each of theſe ſtoves or hot-houſes, ſee HOT-HOUSE, BARK-PIT, &c.

But where large quantities of theſe plants are cultivated, many, beſides the above-mentioned ſtove departments, have alſo what is commonly called a bark-pit, formed by a deep frame of wood, or of brick-work ſix feet wide, the length at pleaſure, five or ſix feet deep behind, and four and half in front, having the top glazed, ſee BARK-PIT; and is deſigned principally wherein to make a bark or dung hot-bed, for the immediate reception of the crowns and ſuckers from the parent-plants, as an eaſe to the ſucceſſion-ſtove, by not crowding it too much, which is often at that time entirely filled with large ſucceſſion-plants for next year's fruiting; but, by the time the crowns, &c. in this pit have ſtruck root and begin to grow, the ſucceſſion-ſtove will be thinned of the largeſt plants, to furniſh the fruiting-houſe, which is generally in October, when the ſuckers and crowns in their pots may be removed to the ſucceſſion-ſtove; though when that department is ſtill crowded with larger plants, theſe ſmall ones of the ſame year are often continued in the bark-pit all winter, or longer, if neceſſary, eſpecially if the walls which form it are of brick, having flues on the back for fires, or even, if it is entirely of wood, the temperature of heat may be continued by the aid of ſtrong dung linings againſt the outſides of the back of the frame, for it is alſo very poſſible

to

to ſtrike the crowns and ſuckers, as above-noticed, by the aid of dung hot-beds only, either in the above bark-pit, or under common cucumber or melon frames, covering the top of the dung with tan, wherein to plunge the pots containing the plants.

It is alſo even practicable to rear and bring theſe plants to produce ripe fruit by the benefit of dung-heat only, under deep frames, hereafter deſcribed, which, however, though attended with conſiderably leſs expence, requires more trouble, and the ſucceſs never ſo certain nor equal to that of proper ſtoves, aided by bark hot-beds and fires in winter.

Crowns and ſuckers, however, as already obſerved, immediately from the parent-plant, may be readily ſtruck and ſet to growing in tan or dung hot-beds without fire, under common garden-frames and glaſſes, and even if the bed is compoſed of dung, with tan at top, wherein to plunge the pots of plants, they, by the aid of two new beds, with occaſional ſtrong dung linings, might be continued there all winter, or, by the additional aid of a more capacious frame, in width and depth adapted to the height of the plants, they might be carried on to a due ſize for the fruiting-ſtove. See *Raiſing them without Fire.*

In many places, however, the whole culture of theſe plants is performed by the aid of one ſtove only, not having the convenience either of a ſucceſſion-ſtove or nurſery-pit, and the plants are raiſed and fruited all in the ſame department, though by this practice not above one half of the hot-houſe can be commodiouſly occupied at one time with fruiting-plants, the other half muſt conſequently be employed in containing the ſucceſſion-plants, and crowns and ſuckers, unleſs you fill the whole pit of the ſtove with the fruiting-plants, ſo crowd the pots of young ones in between them, as frequently practiſed; however, at any rate, when the young plants are raiſed in the ſame ſtove with thoſe that are fruiting, and that we keep the ſtove in a due temperature to fruit them in full perfection, there is no certainty of keeping your crowns and ſuckers, and the ſucceſſion-plants in general, from running to fruit unſeaſonably in their infant or half-grown ſtate; hence the neceſſity is apparent of having a ſmall ſtove ſolely for theſe young plants, or, at leaſt, a bark-pit, or deep frame, which we above obſerved.

However, the moſt commodious and certain culture of this curious plant and fruit is, by the convenience of two orders of ſtoves, at leaſt, as we at firſt adviſed, having the conſtant aid of bark hot-beds.

*Of the Tanner's-bark for the Bark-bed.*

In regard to the tanner's-bark for the bark-bed, we formerly obſerved, that each of the above ſtove departments, &c. ſhould have a pit or cavity formed within-ſide the whole length, wherein to make a hot-bed of tanner's-bark, in which to plunge the pots of plants, and which is commonly called the bark-bed; this kind of hot-bed is compoſed entirely of tanner's-bark, which being of ſuch an agreeably moderate, durable, and nouriſhing heat to theſe plants, that without it we cannot bring them with certainty to fruit in any tolerable perfection; for fire-heat alone will not anſwer the purpoſe, as it dries and hardens the extreme fibres, and the plants become ſtunted, producing ſmall ill-nouriſhed fruit, ripening unſeaſonably late; whereas, by plunging the plants in the above hot-bed, the conſtant moiſt warmth it imparts to the mould and roots is excellently well adapted to the nouriſhment and growth of the plants and fruit: and that of the tanner's-bark is preferable to any compoſt of dung hot-beds for this purpoſe, and being alſo not only of three times longer duration in its heat, it never, like dung hot-beds, ſends up noxious ſteams; and as to duration, the ſame bed with a little aſſiſtance, will ſupport a growing temperature almoſt a year.

In reſpect to the time of duration juſt mentioned of the bark-bed, obſerve, it is commonly made in autumn, i. e. September or October, that it may be in good condition all winter, and it upholds a fine growing heat about four months, which, if then forked up to the bottom, renews its fermentation, and continues two or three months longer; then if in April you add about one third of new tan, the whole being again forked up to the bottom and mixed together, revives the heat ſubſtantially, and continues it in fine order till towards autumn, and by September and October it will be conſiderably exhauſted, when the whole muſt be ſcreened, and all the ſmall earthy ſubſtance cleared away, levelling the larger in the bottom of the pit, and a large quantity of new is then to be procured from the tanner's, to fill it up again to the proper height, three or four inches above the kirb, to allow for ſettling; at the ſame time ſtir up and mix the old and new together, and this work of ſcreening the old, and renewing

renewing the pit with fresh bark at the above time in autumn, is to be practised annually to each bark-bed.

For the choice of the bark, and some other particulars relative to this material, see BARK-BED.

*Of the proper Soil for the Plants.*

In respect to soil proper for the growth of those plants, they prosper freely in any rich, moderately light garden-mould, such as that of the kitchen-ground, where it is of a rich, fat, pliable temperature, and if somewhat of a loamy nature, of mellow texture, it will be an advantage, for nothing heavy, very wet, or stubborn, must be admitted; this mould may be got in readiness in a heap several months before-hand, adding thereto, if necessary, some thoroughly rotten dung; and if the soil is very light, it is proper to add about one half or a third part of fine pliable loam from the surface of a common or other pasture-ground, turning the whole over several times.

Or a compost may be prepared thus:

Procure from a rich pasture-field, or common, some mellow loamy earth, taking the top spit, not digging it out of deep pits, which is harsh and sour; to every load of this add about one third or fourth-part of a load of perfectly rotted dung of an old dung hot-bed; mix these well together, and form the whole in a ridge or long heap in the full air, in a sunny exposure, to lie at least six, but if ten or twelve months, or more, the better, turning the whole several times, that the parts may be properly incorporated, and receive equal benefit of the sun and free air; at each time of turning break all turfy lumps and clods, and when it is to be used break it fine with the spade, but not sift or screen any, which would render it too compact.

Of these composts it is proper to provide as much at first as will serve two or three years, since by lying together it will be much improved for the purpose intended, provided it is turned over three or four times annually.

Be careful never to use the earth at any time too wet.

*General Method of Propagation.*

As to the propagation of this plant, all the varieties, as before noticed, are propagated with great facility by the off-sets or suckers issuing from the lower part of the plant and base of the fruit, as well as by the crown or leafy tuft that decorate the top of it, all of which suckers, off-sets, and crowns, though devoid of roots when separated from the plant, that being planted singly in small pots of light rich compost, plunged in the bark hot-bed in the stove, &c. as hereafter directed, readily emit fibres, and grow freely, and, as already noticed, they, after two, or, at most, three years growth, produce ripe fruit, equal in size and quality to that of their respective parent-plants, observing that the same individual plant produces fruit but once; so that after they have fruited and produced a supply of suckers for encrease, which is commonly at the time of fruiting, they are good for little afterwards, except as stools to produce a few more suckers; hence it is apparent the necessity there is of raising an annual succession of fresh plants for fruiting, by the above means of suckers and crowns.

Each plant generally yields from two or three to five or six suckers at a time, but rarely more than one crown upon each fruit.

The season for propagating, both by suckers and crowns, is according to the time the plants and fruit produce them, which is principally July, August, and September, according as the fruit ripens, though the plants will grow at almost any time, observing, however, that both suckers and crowns are always fit to be taken off for propagation when the fruit is ripe, and not sooner; and as to the suckers, it is a sign of perfection when they appear brownish at bottom; they are to be slipped or drawn off carefully with the hand, not cut; the crown at top of the fruit is to be taken off also with a gentle twist; but this latter is not to be done till the fruit is served at table. When they are taken off, both the suckers and crowns should be divested of a few of the lower leaves at the bottom, where they are to strike root, then laid or hung up in a dry part of the house or stove four or five days, that the wound or moist part of the base, where they adhered to the plant or fruit, may heal and dry up before they are planted, otherwise they would be apt to rot; but in some of the stools you will often find suckers which assume a brown colour at the bottom, as above hinted, and forming little knobs round the edge, which are the embrios of future roots; these suckers being ripe, or having had their full growth on the mother-plant, do not require to be so much dried as those which appear greener, and may even be planted directly, or, at least, taken off one day and planted the next; but the crowns of those fruit which do

not ripen till late in September or October, require to be dried more than thoſe beforementioned, and if ſuckers of thoſe plants that produce their fruit later do not appear brownish at bottom, it is adviſeable to ſuffer them to remain upon the ſtools till March following, for they are very apt to rot at bottom, not only when taken off very ſucculent, but alſo when taken off later than October.

We have commonly the greateſt quantity of crowns and ſuckers from the beginning of Auguſt to the middle of September.

As to the mother-plants or old ſtools, if you are diſpoſed to have as great an encreaſe of young plants as poſſible, the ſtool, after the fruit is gathered, and the ſuckers taken off, may be trimmed, i. e. cut down all the leaves near the bottom, and then plunge the pots directly in a hot-bed of tan or dung under frame and glaſſes, and let them be duly watered, they will ſoon after produce another ſupply of ſuckers, though thoſe of the firſt production are rather preferable.

Likewiſe in caſes, when the plants produce ripe fruit and no ſuckers from the bottom at that time, as ſoon as the fruit is cut, trim the leaves of the old ſtools, as above directed, and plunge them in a hot-bed of briſk heat; it will diſpoſe them ſoon to ſend forth ſeveral ſuckers.

*Method of planting, and their Management in the Nurſery ſtove, &c.*

To proceed to the manner of planting the crowns and ſuckers, and general culture the firſt year, to prepare them for the fruiting-ſtove, obſerve as follows.

Having the bark pit in the nurſery-ſtove or frame, &c. filled with bark, ſee BARK-BEDS, and of a proper briſk temperature of heat, for the reception of crowns, as they are taken immediately from the mother-plant, at the times and manner above-mentioned, and having the proper compoſt in which to plant them, pots, and every other requiſite in readineſs as they ſhall be wanted, theſe young plants then, according as they are fit to be taken from the parent-plant, are to be planted ſingly in ſmall pots of the ſize called forty-eighths, ſee POTS, which, at the time of planting, are to be filled with the aforeſaid compoſt or mould, taking previous care to put a ſhell or piece of tile over the hole at bottom of each pot, to keep the mould hollow, that the water given the plants may paſs off freely; the pots being thus filled, one plant, i. e. crown or ſucker, is to be planted in each pot, in doing of which, be cautious not to plant them too deep, for the earth to get between their leaves, neither ſhould they be planted too ſhallow, for ſo they would be liable to be diſplaced by watering, or doing any other neceſſary culture, obſerving to preſs the earth cloſe about each plant.

According as the plants are thus potted, they are to be directly plunged in the bark-bed of your ſucceſſion-ſtove or nurſery-frame, &c. above deſcribed, obſerving that the bed be previouſly arrived to a due degree of moderate heat, and in which the plants are to be arranged according to their different ſizes, placing the largeſt next the back-part, and the ſmaller in front, and the others in proportion; that being thus regularly diſpoſed, it will add to the beauty of them, and every ſingle plant will more eaſily receive an equal benefit of the ſun, being careful to plunge each pot up to the rim in the bark.

As ſoon as they are plunged give them a gentle watering, and, if the weather is ſunny and hot, ſhade them moderately in the heat of the day, till they are firmly rooted.

Having thus planted and plunged the plants in the bark-bed, &c. they will in a week or two ſtrike root and begin to grow, when air muſt be pretty freely admitted; for at this period it is adviſeable to promote but a moderate temperature of heat, that is, not to encreaſe it conſiderably by keeping the ſtove or frame too cloſe while the heat of the bark-bed is ſtrong, which would not only draw up a vehement heat in the bed at firſt, and force the young plants too much in growth, but, by being too cloſely confined, would draw them up weak, with long, feeble, whitiſh, ſickly leaves: freſh air muſt therefore, at this time, be daily admitted, at leaſt at all opportunities, when the days are hot and calm, by ſhoving or tilting the glaſſes a little open, which muſt always be proportioned in a judicious manner, for there are no preciſe rules to be given for it; but by making uſe of your own obſervation and experience, added to theſe directions, you will ſoon attain a due knowledge in this point. From about nine or ten, to four or five o'clock, is the proper time of day for the admiſſion of air.

Waterings alſo is requiſite, though very moderately, about once a week, eſpecially until the plants begin to grow, when they may be watered more freely, which in fine warm weather ſhould be ſprinkled all over their leaves.

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As the winter advances, be careful that the bark-bed, wherein theſe young plants are now plunged, uphold a conſtant temperature of heat, which is readily promoted by forking up the bark once or twice during this ſeaſon, according as the heat ſhall decline; likewiſe keep the internal air of due temperature, by the aid of occaſional moderate fires on nights, provided the department is furniſhed with flues, or, in default of which, by linings of hot dung againſt the outſides: freſh air muſt alſo be admitted from without judiciouſly, at all favourable opportunities, in ſunny calm days, by ſliding or tilting ſome of the glaſſes or ſaſhes a little open; and moderate waterings is neceſſary about once a week, eſpecially if the plants are in a ſtove or pit where fires are made; in other caſes it muſt be applied ſeldomer, and very ſparingly.

In reſpect to the bark bed, it generally ſupports a good temperament of heat till January or February, when, if the heat is found much abated, take up all the pots, and with a fork ſtir up the bark, as before obſerved, quite to the bottom, plunging the pots again directly, and this will promote a freſh fermentation, and greatly revive the heat, ſo as to maintain a due temperature the remainder of the winter.

And as to the fire-heat above-noticed, for warming the internal air, obſerve, that, if the plants are in the nurſery ſtove or ſucceſſion-houſe, or any other department, having flues for making fires, it is proper to begin to make moderate ones on nights towards the middle of November, or a little ſooner or later, as the froſt or other very cold or dark foggy weather ſhall render it neceſſary, being cautious never to make the fires too ſtrong for theſe young plants, leſt, by occaſioning them to ſhoot too faſt, it force them into trifling fruit the ſame winter, or enſuing ſpring or ſummer, which would be a great diſappointment in reſpect to having proper-ſized plants at the due time for the fruiting-ſtove; for if once theſe young plants draw up with long leaves, appearing white at heart, it is generally the ſigns of a too forward growth, and the conſequence of their untimely fruiting; therefore never be too eager in forwarding their growth at this ſeaſon.

In ſevere weather the glaſſes of the ſtove ſhould be defended on nights with the proper covers, either of thick canvas, oil-cloths, or tarpaulin, let down by a roll and pullies, or by ſhutters or mats.

Where theſe young plants are wintered in any detached bark-pit, or any kind of frame devoid of flues for having fires, I adviſe, in this caſe, when the winter advances, that the pit or deep frame, wherein the bark-bed is made, be lined around on the outſide with hot dung, as practiſed to cucumber or melon-beds, quite from the bottom to the height of the internal bark-bed: on top of the lining lay old hay, fern, or other ſimilar dry litter, continuing either of which materials from the top of the lining to that of the frame all around, which will preſerve the heat of the linings the longer, and prevent the froſt from penetrating the ſides of the frame, obſerving, that when the lining declines its heat, remove the litter, and add a ſufficient quantity of freſh dung on top of the former to the height of the frame; or, if the heat is conſiderably abated, ſtir up the whole with a fork, old and new together, to the above height, which will renew the heat quite from the bottom; and this ſtirring or turning over the linings, with the occaſional addition of freſh dung, in lieu of ſuch that becomes exhauſted, is to be repeated as often as it ſhall appear neceſſary during the winter or continuance of cold weather, which will not only communicate its heat to the bark-bed, but aſſiſt greatly in warming the internal air of the frame, obſerving alſo to cover the glaſſes every night and ſevere weather, and give but very little water to the plants in this department during winter.

Having in either of the above departments conducted the plants ſafe through the winter, it now remains to give directions concerning their ſpring culture.

As to their ſpring culture, the neceſſary care of preſerving heat in the bed, and internal air, with the aids of freſh air and water, as already directed, is ſtill to be obſerved with ſtrict attention; for it is of importance to remark, that from the month of March until September, is the principal growing ſeaſon of theſe plants, ſo muſt begin to encourage it as much as poſſible, though by no means force them; but that when there is a good heat in the bed, indulge them freely with freſh air, and refreſhments of water, by the rules already laid down, and hereafter directed.

At this ſeaſon the plants, for one thing, require their firſt ſhifting into pots a ſize larger, and the bark-bed to be ſtirred up again, and refreſhed with about one third of new tan.

This firſt ſhifting may be performed any time in April, though about the middle of that month is a very good time for that work, and the proper ſized pots are thoſe called thirty-twos, ſee POTS. The proper time being arrived, and the pots and proper quantity of compoſt mould brought ready, proceed to take up the plants out of the bark-bed, and turn each ſingly out of its preſent pot, with the ball of earth entire around its roots, unleſs any appear very unhealthy, or any ways defective, when it is eligible to ſhake the earth from the roots, and trim off all the long fibres and other parts that appear not alive; alſo decayed leaves on the plants in general muſt be ſtripped off, not cut, then, having put a piece of tyle or oyſter-ſhell over the holes at bottom of each pot, put in a little freſh compoſt, and on this place your plant, and fill up around the ball or root with more new mould almoſt to the brim of the pot, preſſing the earth moderately firm about the body of the plant; and when the whole is thus ſhifted, directly prepare to plunge them again in the ſame bed; previous to which obſerve, as above, to add about one third, at leaſt, of new tan to the old, or as much as will ſufficiently raiſe the bed as much as it has ſunk ſince autumn, previouſly clearing away any very crumbly or exhauſted earthy ſtuff at top or outſides; then, having filled up the pit to the uſual height with the new bark, immediately proceed to work the whole, old and new up together, with a fork, ſee BARK-BED, and directly plunge the plants as before, the talleſt at back, continuing the loweſt gradually to the front; and as ſoon as the whole is thus plunged, give a moderate watering all over the leaves and mould of the pots, to cleanſe the plants, and ſettle the new earth cloſe about their roots.

The plants having thus had their firſt ſhifting, and the bark-bed its ſpring renewal by a little new tan and freſh forking up, the principal future culture during ſummer is the neceſſary ſupply of freſh air and water; for the bark-bed will now maintain a proper heat till towards autumn, or time the plants require ſhifting again.

As the ſummer comes on, the plants muſt be indulged more freely with air and water; air muſt be admitted every day, whenſoever the weather permits, by opening ſome of the lights, more or leſs, which ſhould be done the moſt freely when the days are ſunny and the wind quiet, and in July and Auguſt, if the weather is very hot, the plants ſhould be permitted to enjoy a very large ſhare air, even ſo much as to be ſometimes almoſt fully expoſed in the middle of ſuch days; for as they will now grow freely, if they are too cloſely confined they will draw up long and tender, and become feeble and leſs able to produce fruit in full perfection of ſize and flavour; and likewiſe, by too cloſe confinement in ſummer, they will be in danger of going into fruit early in winter. Water during this ſeaſon in warm ſunny weather is neceſſary, in moderate quantities about twice a week, applying it in a morning until June; and during the hot months of June, July, and Auguſt, an evening is the moſt eligible time, ſprinkling the water occaſionally all over their leaves; which works of admitting freſh air, and giving water, is the principal culture neceſſary to theſe plants in ſummer, until the time of their ſecond ſhifting into larger pots in Auguſt.

Obſerve, however, if the bark-bed is much crowded with plants, and that by the beginning of July they have advanced conſiderably in growth, it would be of much advantage to remove ſome of the ſmalleſt plants in their pots into a bark-bed, under any common frame, till October; ſo re-plunge the larger ones at a more eligible diſtance in their preſent department, which is the moſt neceſſary culture to encourage them to bottom well.

In regard to their ſecond ſhifting, the plants in general will require it in Auguſt, at which time a quantity of the ſtrongeſt plants are to be ſhifted into proper ſized pots, wherein they are finally to remain to produce their fruit.

This ſecond ſhifting is to be performed about the beginning or middle of Auguſt; the pots proper for their reception now is called twenty-fours, but not larger than ſixteens for the ſtouteſt plants: in the execution of this work obſerve to turn the plants out of their preſent pots with the balls of earth entire about their roots, and may carefully trim off a little of the outſide mould, as alſo ſome of the extreme fibres of the roots on the outſide of the ball, ſtill preſerving the ball of earth about them; then having tiled or ſhelled the holes of the new pots, and put ſome freſh earth at bottom, to raiſe the plant to its due height, place the plant thereon, and fill up the pot around the ball with more compoſt almoſt to the top, and when they are all ſhifted, ſtir up the bark-bed to enliven the heat, and inſtantly plunge the pots again in the order of arrangement before directed, and

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give a moderate watering all over the plants: here they may remain ſix weeks or two months, or longer; for if the bark-bed at this time of ſhifting is well forked up to the bottom, it will uphold a heat proper to ſupport the plants in a growing ſtate till October, when moſt of them will have obtained a large ſize, and the fruiting-ſtove is to be got ready for the reception of the largeſt that appear capable of fruiting in perfection the enſuing year: in the mean time be careful, after this ſecond ſhifting, to continue the admiſſion of a due portion of freſh air daily, to ſtrengthen their growth, to diſpoſe them to produce handſome fruit at the due time; ſupplying them alſo with gentle refreſhments of water once or twice a week, according to the temperature of the ſeaſon.

*Removing them to the Fruiting-ſtove, and Culture there.*

Towards the end of September the above plants in the nurſery-ſtove or ſucceſſion department will be grown to a conſiderable ſize, when the fruiting-ſtove, &c. muſt be got ready, and its bark-pit filled with entire freſh tan, for the reception of the largeſt plants; and ſuch as have not yet acquired due ſtrength for fruiting in perfection next year, may be permitted to have another year's growth in the ſucceſſion-ſtove.

If the fruiting ſtove is now occupied with plants in fruit, the ſucceſſion-plants cannot be moved thither till the fruit is moſtly all cut, which for the general part is pretty well cleared by October or beginning of November, at which time a ſufficient quantity of freſh bark or tan muſt be procured from the tanner's to fill the bark-pit of this ſtove, for the bark bed muſt be always renewed annually almoſt entirely with freſh tan at this ſeaſon, at ſame time previouſly ſcreening all the old tan to ſeparate the larger from the ſmall exhauſted parts, and all the ſmall earthy ſtuff that paſſes through the ſcreen taken away, and levelling the other along the bottom, provide as much new tan as, with this, will fill up the pit to the proper height.

As to the choice of the new bark, it ſhould be freſh, i. e. having been but ſhortly thrown out of the tan-vats, and rather large than ſmall, for the latter ſoon becomes earthy, and loſes its fermentation: when it is brought from the tanner's, it is frequently wet and unfit for immediate uſe; let it therefore be ſpread on level ground to dry a day or two, then either caſt it in an heap to acquire a proper warmth, or put it immediately into its deſtined pit in the ſtove, upon the remaining old tan, raiſing it three or four inches higher than the kirb at top, to allow for ſettling, forking up the old and new together, ſo ſuffering the whole to remain a week or ten days, to acquire a due temperature for the reception of the plants from the ſucceſſion-ſtove; for they muſt not be plunged in it before it is capable of imparting a proper warmth to the mould in the pots.

Having thus prepared the pit of this ſtove, as above, with good freſh bark, and it has obtained the due degree of heat, then immediately bring your largeſt plants from the ſucceſſion-ſtove in their pots, and plunge them with the ſame regularity I before adviſed, and allow them room, that they may bottom well, for this is of importance in reſpect to their producing large fruit: the plants being plunged, it is proper the next day, or as ſoon as the bed has communicated a proper warmth to the earth in the pots, to give them a moderate watering, both to the pots and all over the leaves, which will be a conſiderable refreſhment to the plants.

They being now placed in the fruiting-ſtove are called fruiting plants.

Their culture in this department, i. e. the fruiting-ſtove, differs little from that in their former repoſitory.

All winter the internal air of the ſtove muſt be ſufficiently ſupported by the aid of fires on nights, and ſevere froſty weather. As to the heat of the bark-bed, it will ſupport a due temperature till February, when forking it over will revive it for two months longer. Freſh air during this ſeaſon muſt ſtill be admitted with diſcretion at favourable occaſions in ſunny mild days, and moderate waterings will be needful about once a week.

With reſpect to the time to begin to make the fires, is ſome time in November, either ſooner or later in that month, according as the cold advances, for we muſt be very careful to obſerve this as ſoon as ſevere or very foggy or cold wet weather renders it neceſſary; but unleſs ſevere froſts happen, gentle fires only on nights ſhould be made until the beginning of January, when they ſhould be gradually encreaſed more briſker, in order to prepare the plants for ſhewing their fruit in February or beginning of March, being always careful to regulate your winter's heat by the thermometer, ſee THERMOMETER; obſerving the fires



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to be made principally on nights, except in ſevere or very wet or foggy damp weather, then it is proper to continue them alſo moderately in a morning.

In very ſevere weather it is alſo eligible to cover the glaſſes on nights with ſuch covers as the ſtove is furniſhed, either by large thick canvas cloths or tarpaulins on rolls, to let down and up by pullies; or with large mats, or ſhutters; but the firſt-mentioned is the moſt ready covering for the top glaſſes, ſee HOT-HOUSE; though many uſe no other covering for their ſtoves, where fires can be made, than nailing ſtrong mats at top on nights in very ſevere weather; alſo occaſionally againſt the front and end glaſſes.

During this ſeaſon give air diſcretionally in fine mild ſunny days, from ten till about three o'clock, as favourable opportunities ſhall then offer

Give alſo moderate waterings about once a week, and not much over their leaves at this time of year, uſing the tin pipe hereafter mentioned.

Towards ſpring, when the plants begin to ſhew fruit, be ſtill careful to promote a due degree of heat in the bark-bed, and continue the fires regularly on nights, and give air and neceſſary waterings. If, in January or February, as above hinted, the bark-bed decreaſes much in its heat, fork it up, as directed for the ſucceſſion-plants, which will renew the fermentation, and continue it in fine order until April, when a little new tan muſt be added, and the whole again well ſtirred up together to the bottom.

In the beginning of April therefore, prepare to add ſome new tan, and ſtir up the bark-bed again, to promote ſuch a durable heat as will carry the plants through the ſummer, and till the maturity of the fruit now advancing in growth: to do this the more effectually, provide about one third of the pit full, or a little more or leſs, of new tan, prepared, as before, in making the bed; and after taking up all the pots of plants, throw this in upon the old tan, filling up the pit to the full height, then fork the whole up to the bottom, mixing the old and new well together; this done, level the top, and directly re-plunge the plants, and the effect of this operation will ſoon appear in the growth of the fruit; for after this fruit begins to advance, it is good culture to promote a good heat in the bed, as well as ſufficiently to preſerve a conſtant and proper temperature of internal air, according to the degrees of heat marked on the thermometer, that you may more freely apply the neceſſary aids of freſh air and water; and that by proportioning heat, air, and water, depends the whole ſucceſs of having large and well-flavoured Pine-Apples.

One caution in reſpect to watering is, that after the fruit begins to appear, I adviſe not to water too freely over the leaves, but more eſpecially when they are in bloom, leſt you waſh off the farina of the antheræ, before it has ſufficiently performed its fecundating function, and thereby prevent ſome of the knobs or tubercles from ſwelling in a due manner, which would render the fruit unſightly; therefore, in watering at this period of their growth, it is proper to uſe the tin pipe hreafter mentioned, which is alſo very convenient for watering at all other times, and more eſpecially in winter, when the plants ſhould never be ſo much wetted as to occaſion water to ſtand in their hearts.

As the ſummer and warm weather advances, gradually decreaſe the ſtrength and uſe of fire heat, and by degrees uſe it only occaſionally, ſo as to leave it wholly off in May.

Continue during ſummer to admit freſh air daily into the ſtove, by ſliding the front or top lights more or leſs open, according to the power of the ſun's heat, ſtill obſerving, that from about eight or nine in the morning; till four or five in the evening, is the proper time for doing this: alſo continue to give water freely all ſummer, about twice a week, at leaſt, in hot weather, performing it either in a morning or an evening, which, after the bloſſom of the fruit is paſt, and it advances in magnitude, may be given in occaſional refreſhments all over their leaves, as this will promote a lively appearance in the plants, and encourage the free growth of the advancing fruit; for the heat of the bark-bed being promoted by the means adviſed to be practiſed in April, if you are careful during the hot weather to indulge the plants freely with freſh air and refreſhments of water, agreeable to the preceding rules, the fruit will encreaſe freely in bulk, and advance faſt to perfection, ſo as thoſe which appeared early in ſpring will probably arrive to maturity in June or July.

They, however, in reſpect to the times of ripening, generally come dropping in from June or July to October or November, but are commonly in greateſt perfection in Auguſt and September.

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The firſt ſign of perfection in moſt ſorts is, their aſſuming a ſingularly beautiful golden yellow, though ſome diſcover different tints peculiar to them; but the moſt certain ſign of full growth and ripeneſs in this fruit, is its delightful fragrance: obſerve therefore theſe tokens of perfection, and let the fruit be gathered before it becomes ſoft; for it would then be greatly diminiſhed in its perfume and delicate poignancy of flavour.

The manner of gathering this fruit is, to cut it from the plant with ſeveral inches of the ſtalk, preſerving alſo its crown of leaves at top.

To have it eat in the higheſt perfection of flavour, it ſhould be cut in a morning before nine o'clock, and laid in a cool dry place till dinner-time, or till wanted, but its juice is always more poignant and rich when eaten the ſame or next day, though they will keep a week or longer, if required upon any particular occaſion.

It is always ſerved to table with its crown of leaves on, and when the fruit is to be eaten, the crown is twiſted off and reſerved for planting, to become a new plant, which, in its turn, produces a freſh fruit, as well as ſuckers, for future propagation.

If too many of theſe fruit are like to arrive to maturity together, their ripening may be retarded by removing ſome of them to one end of the ſtove by themſelves, and ſo ſhade the glaſſes with mats in ſunny days.

As to the old plants, after the fruit is gathered, they bear no more, ſo are only fit for ſtools to produce ſuckers, having their leaves trimmed down cloſe, and plunged in the bark-bed, or any other briſk hot-bed, as we have before directed.

*Neceſſary Obſervations.*

In reſpect to the tin pipe before recommended to be uſed occaſionally in watering theſe plants, it is extremely uſeful and convenient, for the more ready conducting the water, in the quantity intended, to any particular plant in any part of the bark bed: its dimenſions may be ſix feet long, an inch and half diameter at the upper end, the other about half an inch, though it may be of two different joints to lengthen or ſhorten at pleaſure; at the largeſt end ſhould be a kind of funnel, either fixed, or to take off and on occaſionally, to receive the water from a watering pot. By the aſſiſtance of ſuch a pipe, the water is readily conveyed to all the plants ſeparately in any quantity, without pouring any into the hearts of them when not intended, or without wetting the bark-bed more than what is neceſſarily applied to moiſten the earth in the pots, &c. This pipe ſhould be particularly uſed in winter; alſo occaſionally in ſpring during the bloom of the fruit.

Soft water ſhould always be uſed for watering theſe plants, either that of a river, pond, or rain water, being careful in applying this article never to give it in too great quantities, to wet the mould conſiderably, eſpecially in winter.

In winter it is proper to have a ciſtern, or ſome other conveniency placed in the ſtove to contain water, that the chill may be a little taken off previous to watering the plants therewith.

With regard to the fuel for making the fires in the ſtoves, ſeveral ſorts are uſed.

The beſt fuel for this uſe is coal, which makes the moſt ardent, regular, and durable fires of any other materials whatever, and therefore, where it can be obtained at a moderate expence, I ſhould particularly recommend it for this purpoſe: but, in default of coal, wood is next to be preferred, and the larger the principal part is, the better for the duration of the fires. Next to wood is ground-peat and turf, but theſe are ſoon exhauſted, unleſs the fire-place is purpoſely conſtructed, ſee HOT-HOUSE. There is a ſort of fuel by ſome uſed, to be had at the tan-yards, made of old tan, &c. into ſquare lumps, which is alſo called peat; but all theſe are inferior to coal, though, where this article is ſcarce, one or other of theſe muſt ſuffice.

It is to be obſerved, the fires in each department are to be made chiefly from November until April or beginning of May, and ſhould be made every evening about four, five, or ſix o'clock, which ſhould be attended twice or thrice till bed-time, ſo as to warm the flues ſufficiently to ſupport a due temperature in the air of the ſtove till morning, when, in very ſevere froſt, and very wet or foggy damp weather, a moderate fire ſhould alſo be made, but in mild dry weather none is neceſſary at that time of day.

To regulate you in regard to the ſtrength of the fires, and proper times to make them, it is proper to have a good thermometer always hung up in the middle of the ſtove, having the proper degrees of heat marked *Ananas*, never permitting it to be more than five or ſix degrees above, nor leſs than that below the mark.

*Raiſing*

*Raiſing theſe Plants without Stoves and Fire-heat.*

We having occaſionally obſerved, that it was poſſible to raiſe and fruit this favourite plant without the aid of ſtoves or fire-heat, by the heat of hot-beds only, under proper frames: the hot-beds for this purpoſe are either of tanner's-bark, aſſiſted by occaſional dung linings, or may be compoſed of dung, having a foot of tan or ſaw-duſt at top, in which to plunge the pots, and aſſiſted alſo by proper linings of dung.

This method, however, though apparently conſiderably the leaſt expenſive, is attended with much more trouble and uncertainty than the ſtove culture already treated on, having the conſtant aid of bark hot-beds, and fire-heat in winter.

However, for the advantage of thoſe who cannot eaſily obtain a plenty of tanner's-bark, and who have no mind to go to the expence of erecting ſtoves, and burning fire ſix months in the year, and are diſpoſed to make trial of raiſing Pines by the above methods, we ſhall proceed to give ſome hints for the manner of effecting it, though we do not recommend it as a generally ſucceſsful practice.

I before noticed in the ſtove culture, that the crowns and ſuckers immediately from the mother-plant may be readily ſtruck, i. e. rooted, and ſet to growing in a tan or dung hot-bed, under a common cucumber or melon-frame; the dung-bed having ten or twelve inches depth of tan at top, or, in default thereof, ſaw-duſt, but tan is beſt, in which to plunge the pots containing the plants, and by ſhifting them into one or two new ſuch ſubſtantial hot-beds, with the addition of occaſional linings of the ſame material, the plants may be continued there all winter, or even until the following autumn, provided the frames were of due depth for the plants to grow.

But for this purpoſe it is proper to be provided with two different ſized wood-frames, furniſhed with ſuitable glaſs lights, particularly for this method of culture, one by way of a nurſery-frame, to ſtrike and rear the plants, and another of a greater depth, fo fruiting them, as adviſed for the ſtoves.

The firſt of theſe frames being intended as a nurſery-frame for rearing the crowns and ſuckers, its dimenſions may be ten or twelve feet long, ſix wide, three and a half deep at back, and two and half in front, with three ſliding lights at top, and if half the depth of the front was glazed it would be an advantage; which frame, at the proper time for planting the crowns and ſuckers, i. e. Auguſt and September, is placed upon a bark-bed, or ſubſtantial dung hot bed covered with tan, to plunge the pots in, or, for want of that, ſaw-duſt, but the former is greatly preferable; obſerving, if you uſe dung-beds, three or four different new ones, with occaſional linings, as hereafter deſcribed, will be required to ſupport the growth of the above young plants a year, or till fit for the fruiting-frame, being careful to ſupply them at due times with freſh air and water, as directed in the ſtove-culture, though, in this place, as having no fires to dry the damps, they muſt be very ſparingly watered in winter.

The fruiting frame being intended to fruit the plants, muſt be deeper than the former, and the whole front and ends, as well as the top, glazed, and may be made to place on the top of a raiſed pit of the ſame width and length, and three feet and half deep, formed either by a wall of brick or ſtrong inch planking, in which to make the hot-bed; which pit is more particularly eligible, if you intend to have a bark hot-bed: but as to the dimenſions of the frame itſelf, it may be twelve feet long, ſix in width, four and half deep in the back, and two and a half depth in front, having three ſliding ſaſhes in the front, and one at each end, and the whole covered at top with three glaſs lights to ſhove up and down; the glazing at top done imbricatum, as directed for the hot-houſe, ſee HOT-HOUSE; having alſo a painted canvas or old ſail-cloth on a roll, or ſome other covering, to uſe on nights, to defend the glaſſes. As to the pit, it may be ſunk eighteen inches, if dry ground, allowing width and length enough to build a nine-inch brick wall on every ſide, to form the cavity of the pit of due dimenſions to receive the frame at top of it, which wall is to be three feet ſix inches high from the bottom; or, if the back part was of inch deal, would be more convenient to admit the benefit of lining, to renew the heat; or, inſtead of brick, a pit formed entirely of poſt and planking; or a moveable wood one would anſwer the ſame purpoſe: upon this brick pit, or wood frame, the glaſs frame of the aforeſaid dimenſions is to be placed, and the hot-bed is to be made in the pit to its full depth. To render it ſtill more convenient, one ſuch frame might be made to ſerve two pits, making it to ſlide from one to the other, having a partition between; and when one bed has declined its heat,

make

make a fresh one in the spare pit, so slide the frame over it, and move the plants therein; the utility of this will be very obvious in practice, especially if the hot-bed is composed of dung, which will require renewing three or four times in the course of the year.

This is the general construction of the fruiting-frame.

In the pit of this frame a hot-bed of tan, or of dung covered with tan, &c. before hinted, is to be made the latter end of September, for the reception of the plants from the nursery frame, observing, if the bed is of dung, make it substantial enough for the top to be within eight or ten inches of the top of the pit when fully settled, upon this lay the tan or saw-dust above-mentioned, and in which plunge the plants in the same order as in the hot-house, giving fresh air and water, agreeable to the directions in the stove-culture, but being still careful to water with great moderation in these frames during winter, and cover the glasses every night.

If the hot-bed of this frame is of tanner's-bark, it, by the aid of dung linings at back of the pit, will support a due temperature till February, then stirring it up, as directed in the stoves, renews the heat till April, and then, by adding a little new tan, and another forking up, and occasional linings, it will support a sufficient heat to bring the fruit to maturity; but if the bed is of dung covered with tan, &c. two new beds, with occasional linings, will be requisite to carry the plants through the winter; that is, one bed when the plants are first placed in the frame in September, and another new one in the middle or end of December, and about two more to bring the fruit to perfection: hence the utility appears of having two pits, as you can then conveniently make a new bed in the spare-pit in due time, to acquire a proper temperature to be ready to receive the plants in their pots immediately from the declined hot-bed, at the same time shoving the frame from thence over the new one. Observe, in the mean time, during winter, that as soon as you perceive the heat of the bed, either that of tan or dung, begins to abate, you begin to line the back part of the pit and frame on the outside with hot dung, both to enliven the heat of the bed, and assist in warming the internal air of the frame: this lining should be laid three feet wide, at least, at bottom, and a little sloping at top, that the wet may pass off freely; neither should it be raised to the full height at first, but a little at a time, as the frost or severe weather increase, till at last it become as high as the whole back-part of the pit and frame together, continuing it also, as the cold advances, round the ends and front of the pit, at each time laying hay, fern, or other dry litter upon the lining, which preserves the heat the longer, and prevents the frost from penetrating the frame; and by thus gradually lining the beds, as the severity of the weather shall demand, it will maintain the due temperature of heat much longer, and more regular than if the whole quantity was to be added at once; observing, when the heat of these linings is much decreased, it must be renewed by the addition of some fresh dung, and the whole forked over to the bottom, which is to be repeated as you shall see occasion.

By observing the above directions in the management of the hot-bed, and giving fresh air at all due opportunities consistent with the rules laid down in the stove culture, and moderate waterings at times in fine sunny weather, the plants will shew fruit in February or March, which will ripen at the usual time in as good perfection as can be expected.

BROOMS, for the use of gardens.

In pleasure-grounds Brooms are almost daily wanted, especially in summer, and the best sorts for this use are those of Birch, made of the finest brush-wood, that will not soon become stubbed; nor should they be made very large and clumsey, which would tear up and deface the grass and gravel.

Heath Brooms are sometimes used, but these are not near so good as Birch ones for gardens.

In default of Birch, Beech-Brooms are also sometimes used, which being made flat, spreading, and light, they will answer tolerably for sweeping the mowings of short grass, and fallen leaves off grass-ground; but are not so fit for use on fine gravel, except lightly to whisk it from fallen leaves.

BRUNSFELSIA.

There is but one species, a shrubby exotic of the stove, garnished with simple leaves and funnel-shaped flowers.

Class and order, *Pentandria Monogynia*.

*Characters.*] CALIX is monophyllous, bell-shaped, five-parted, and permanent. COROLLA, a funnel-shaped petal, the tube long, but spreading and five-parted at top. STAMINA, five filaments inserted into the corolla,

and oblong antheræ. PISTILLUM, a roundiſh germen, ſlender ſtyle, and thick ſtigma. PERICARPIUM, a globular berry of one cell, having numerous ſeeds.

The ſpecies is,

BRUNSFELSIA *Americana.*

*American Brunsfelſia.*] Brunsfelſia with a woody, branching, rough ſtem ſix or eight feet high, garniſhed with oblong, entire leaves on foot-ſtalks, and large whitiſh flowers by threes or fours at the ends of the branches, ſucceeded by round, ſaffron-coloured, ſoft fruit.

This plant may be raiſed here from ſeeds in the ſpring, ſown in pots, and plunged in a bark-bed; and may alſo be propagated by cuttings in the ſame ſeaſon planted in pots, plunging them alſo in a bark-bed or other hot-bed under glaſſes; and the plants muſt always remain in the ſtove.

BRYONIA, the White Briony, or Wild White Vine.

The plants are herbaceous climbers, conſiſting of annuals and perennials; of the latter are about two ſpecies that merit notice by way of variety, one a hardy plant of Engliſh growth, the other an exotic that requires ſhelter in winter.

Claſs and order, *Monoecia Syngeneſia.*

*Characters.*] CALIX, male and female flowers apart on the ſame plant, having a monophyllous bell-ſhaped cup, five-parted at top. COROLLA is bell-ſhaped, five-parted, and adheres to the calix. STAMINA, the male flowers have three ſhort filaments, two of which have double antheræ, the other one. PISTILLUM, in the female flowers a germen under the corolla, a trifid patent ſtyle, and ſpreading emarginated ſtigma. PERICARPIUM, a ſmooth oval berry, having oval ſeeds adhering to the ſkin.

[1]BRYONIA *Alba.*

*Common White Briony.*] Briony with a large, thick, fleſhy, white root, ſending up annually very long climbing ſtalks and branches, garniſhed with large, palmated, rough, callous leaves, and numerous cluſters of white flowers in May and June, ſucceeded by bright red berries.

[2]BRYONIA *Africana.*

*African Tuberous-rooted Briony.*] Briony with a large tuberous root, ſending up annually ſeveral ſlender rambling ſtalks, having palmated, five-parted, ſmooth leaves, their lobes cut and pinnatifid, and cluſters of greeniſh flowers, ſometimes ſucceeded by berries having ripe ſeed.

Both the ſpecies have perennial roots, but their ſtalks die annually in autumn.

The *Bryonia Alba* is a wild plant of England, inhabiting dry banks under hedges, where the roots acquire a monſtrous ſize, ſending up ſtrong climbing branches, running many feet long, and attach themſelves to the buſhes, or the firſt thing they encounter in their progreſs, and make a ſingular appearance, but it is ſeldom admitted in gardens, though a plant or two for variety merits a place in large grounds as climbers.

The root of this ſpecies is alſo in great requeſt for medical uſes.

Its propagation is eaſily effected by ſowing the berries in ſpring in a dry light ſoil where the plants are to remain, and when they come up, thin them to a conſiderable diſtance.

The African ſort muſt be kept in pots, to be moved under ſhelter of a frame or greenhouſe in winter.

It is raiſed by ſeeds in a hot-bed in ſpring.

BRYONA NIGRA. See TAMUS.

BUBON, Macedonian Parſley.

This genus compriſes herbaceous and ſhrubby plants; the former have little merit, but of the latter are two ſpecies proper to be admitted in the green-houſe collection.

Claſs and order, *Pentandria Digynia.*

*Characters.*] CALIX, umbelliferous flowers, having a five-leafed involucrum; the general umbel compoſed of about ten ſmaller; each ſmaller one of fifteen or twenty rays, and a ſmall permanent calix to each floret. COROLLA, each floret of the umbel conſiſts of five ſpear-ſhaped inflexed petals. STAMINA, five filaments and ſimple antheræ. PISTILLUM, an oval germen below the corolla, two reflexed ſtyles, and blunt ſtigmas. PERICARPIUM, none; an oval two-parted fruit, having two ſeeds.

The ſpecies of note are,

[1]BUBON *Macedonicum.*

*Macedonian Herbaceous Bubon.*] Bubon with many compound leaves from the root, on longiſh foot-ſtalks, each leaf compoſed of many oval rhomb-ſhaped indented lobes, and in the midſt a branching flower-ſtalk about fifteen inches high, having all the branches terminated by white umbels in July, and ripe ſeed in autumn.

[2]BUBON *Galbanum.*

*Shrubby Galbanum-bearing Bubon.*] Bubon with an erect woody-ſtalk growing eight or ten feet high, having a purpliſh-coloured powdered bark, leaves at the joints, compoſed

poſed of many rhomb-ſhaped, indented, ſmooth folioles, and the ſtalks ſurmounted by yellow umbels in September, but no ſeeds in England.

[3]BUBON *Gummiferum.*

*Shrubby Gummiferous Bubon.*] Bubon with an erect woody ſtem, garniſhed below with leaves compoſed of many rhomboid, ſawed, ſmooth folioles, thoſe above pinnatifid, narrow, and tridented, and the ſtalks crowned by white umbels in September, but rarely any ſeeds here.

Theſe two ſhrubby kinds, on breaking any part of them, impart a gummy cream-coloured matter, of which is prepared the *Galbanum* of the ſhops.

The *Bubon Macedonicum* is cultivated in ſome gardens for variety. It is propagated by ſeeds in ſpring, ſown in a bed of common earth, and in autumn tranſplant the plants into a warm border, and ſome in pots for occaſional ſhelter. In about three years they will flower and perfect ſeeds, then totally periſh.

The two ſhrubby Bubons are natives of Africa, and require ſhelter of a green-houſe here in winter, ſo muſt always be cultivated in pots.

They are raiſed from ſeed procured from Africa, ſowing it as ſoon as poſſible in pots of light earth, to be occaſionally ſheltered from froſt, and in ſpring plunge them in a hot-bed, where the plants will riſe, and be fit to plant in ſeparate ſmall pots in May or June, plunging them alſo in a moderate hot-bed, and ſupply them with occaſional ſhade, water, and freſh air, to which fully expoſe them in July, and in October remove them to the green-houſe.

BUDDLEJA, *Buddleja.*

It compriſes two ſhrubby plants of the hot-houſe, decorated with ſimple leaves, and monopetalous flowers in ſpikes.

Claſs and order, *Tetrandria Monogynia.*

*Characters.*] CALIX is ſmall, divided into four parts, and permanent. COROLLA, a bell-ſhaped quadrifid petal. STAMINA, four ſhort filaments in the diviſions of the corolla, and ſhort antheræ. PISTILLUM, an oval germen, ſhort ſtyle, and blunt ſtigma. PERICARPIUM, an oblong capſule of two cells, and numerous ſeeds.

The ſpecies are,

[1]BUDDLEJA *Americana.*

*American Buddleja.*] Buddleja with a woody whitiſh ſtem and oppoſite branches, growing eight or ten feet high, garniſhed with oval, ſawed, oppoſite leaves, downy underneath, and yellow flowers in branching ſpikes from the ends of the branches.

[2]BUDDLEJA *Occidentalis.*

*Occidental Buddleja.*] Budleja with a woody ruſſety ſtem, growing fifteen or eighteen feet high, ſending out many ſlender branches, adorned with ſpear-ſhaped, pointed, entire leaves, placed oppoſite, and large, looſe, whorled ſpikes of white flowers at the end of every branch.

Theſe two plants are of American growth, and preſerved here in our ſtoves for variety.

They are propagated by ſeeds procured from America, which ſow in pots of light earth; plunge them in a hot-bed, and give light waterings thrice a week, and the plants are to be tranſplanted into ſeparate pots, and placed again in the hot-bed, or in that in the ſtove, where they muſt be always continued.

BULBOCODIUM, Mountain-Saffron.

Two ſpecies only belong to this genus, ſmall, bulbous-rooted, flowery perennials of the common ground, having funnel-ſhaped hexapetalous flowers three or four inches high, ſix ſtamina, and one ſtyle.

The ſpecies are,

[1]BULBOCODIUM *Serotinum.*

Late-flowering Mountain-Bulbocodium, with narrow ruſh-like leaves.

[2]BULBOCODIUM *Vernum.*

Spring-flowering Spaniſh Bulbocodium, with ſpear-ſhaped concave leaves.

They may be propagated by off-ſets at the decay of the flower and leaf every ſecond or third year; alſo by ſowing the ſeed in pots in autumn, ſheltering them in a frame from froſt, and the plants will appear in ſpring, which, at the decay of the leaves, may be taken up for planting in the borders in October, where they will flower the year following.

BULBUS, a Bulb, or Bulbous root, *Radix Bulboſa*; or, according to naturaliſts, a kind of great bud produced under-ground upon the crown of the root of certain herbaceous perennials, ſuch as the onion, lily, tulip, &c. hence denominated Bulbous-rooted plants.

In Bulbous plants, what we commonly call the root is defined to be only a ſort of large bud, compoſed moſtly of the rudiments of leaves, which encloſe and ſecure the embryo of the future ſhoot of the flower; for, at the lower part of this bulb may be obſerved a fleſhy knob or tubercle, from which

proceed a number of fibres attached thereto, is properly ſpeaking the true and genuine root from which the flower-ſtem immediately riſes, and that the upper part or bulb is, as before hinted, in moſt ſorts, partly the remains or rudiments of former leaves, as well as the rudiments of future ones, ſerving for a certain time as a cradle or nurſery, to defend from the injuries of weather the embryo plant, that is, the leaves and future flower-ſtem in miniature, which, after being repaired a certain number of times annually, the whole bulb and root periſhes, not, however, till it has produced from its ſides annually ſeveral ſmaller bulbs, off-ſets, or ſuckers, for perpetuating the ſpecies; for each ſucker becomes an individual, producing flowers and ſeed like the parent; forms alſo new ſuckers, which, in their turn, produce others, and in this manner multiply the ſpecies as certainly as the ſeed: for it is obſervable, that the remains of the former leaves ſunk below, and the rudiments of the future ones, forming ſeveral coats or rinds, whereof the bulb conſiſts, ſucceſſively periſh and ſhrink up into ſo many dry ſkins, betwixt which, and in their centre, are formed other leaves and rinds, and thus the bulb is perpetuated, till arrived at a certain ſtate of growth.

Bulbous-roots differ eſſentially from tuberous-roots, which conſiſt of an entire ſolid fleſhy ſubſtance, as turnep, potatoe, carrot, radiſh, &c. See TUBEROUS-ROOTS.

Of Bulbs there are two principal ſpecies or kinds, viz. Tunicated Bulbs——Squamous Bulbs.

Their deſcriptions are,

[1]BULBUS TUNICATUS, Tunicated, or Coated Bulbs, compoſed of ſeveral tunics, or coats, cloſely enfolding each other, as in the *Allium Cepa*, or onion, &c.

[2]BULBUS SQUAMOSUS, Squamous, or Scaly Bulbs, conſiſting of many ſcales, or thin plates, or ſmall oval parts placed over each other imbricatum, i. e. in the manner of ſcales of fiſh, or tiles on an houſe, as in the *Lilium*, or lily.

The above two ſpecies of bulbs comprehend ſome eſculents of the kitchen-garden, ſuch as garlick, onions, leeks, ſhallots, &c. and a numerous train of flowery plants, moſtly herbaceous perennials, producing beautiful garden-flowers, and moſt of them hardy enough to ſucceed in the beds and borders in the full ground.

The principal Bulbs of the flowery tribe are of the following genera:

Amaryllis, including the Guernſey lily, bella-donna lily, Jacobæa lily, &c.—Narciſſus, or daffodil, including jonquils—hyacinth—tulip—fritillaria, and crown-imperial—Lily, including martagons—ornithogalum, or ſtar of Bethlehem—galanthus, or ſnow-drop——leucojum, or great ſnow-drop—ſcilla, or ſea-onion—colchicum—albuca, or baſtard ſtar of Bethlehem—muſcaria, or muſk and grape hyacinth—iris, the bulbous and Perſian—hæmanthus, or blood-flower——Allium, or moly—crocus, including ſpring and autumn kinds—bulbocodium—pancratium, or ſea daffodil. For the different ſpecies and varieties of each ſort, ſee their reſpective genera.

Moſt ſorts of Bulbous roots multiply exceedingly by off-ſets, by which every particular ſort is continued, and new varieties are obtained from ſeed. See the culture of the reſpective ſorts.

Bulbous-plants for the moſt part may be ſaid to be perennial, for, although the ſame individual root exiſts but for a certain time, ſome not more than a year after having attained a flowering ſtalk, others longer, they, previous to their diſſolution, afford from their ſides a ſupply of ſuckers or off-ſets to perpetuate the reſpective kinds; ſo that, at the end of many years, what is ſtill often conſidered as the ſame individual root, is, in reality, another, as to every particle thereof.

All Bulbs renew their leaves and flower-ſtems annually, and their principal ſeaſon of flowering is at different times, from March to October, ſome producing their flowers at one time, and their leaves at another, as in ſome ſpecies of amaryllis and colchicum; others produce their flowers and leaves together, as the hyacinth, tulip, narciſſus, &c. and the leaves and flower-ſtem of all the ſorts periſh annually, at a certain period after flowering, at which time the root begins its period of reſt, drawing no nouriſhment from the ground, remaining in that inactive ſtate ſix weeks or two months; within this period of inactivity of theſe roots, before they put out new fibres to prepare for the future flower, is the only proper time to remove them, either to ſeparate the off-ſets for propagation, or to plant the roots in freſh prepared earth, or remove them to any other part of the garden, or to ſend to any diſtance; likewiſe to reſerve the Bulbs out of ground for autumn planting,

planting, when the beds or borders can be more conveniently prepared again for their reception; for moſt ſorts, taken up at the above-mentioned period of reſt, may be kept out of ground ſeveral months, even if occaſion requires; ſome ſorts from the time the flowers and leaves decay in May, June, or July, until the following ſpring, as often practiſed, when intended by ſpring planting to retard the time of flowering, to obtain a longer ſucceſſion of bloom, by ſucceeding that of the autumn plantations.

It is however particularly neceſſary to take up all the choice kinds of Bulbs annually, to ſeparate the off-ſets for encreaſe, as well as to freſh prepare the earth of the beds and borders, to promote the merit of the ſucceeding year's bloom; this is particularly proper for the curious tulips, hyacinths, narciſſus, &c. as to the more inferior ſorts of Bulbs in general, they ſhould alſo be removed every other year, or as often as their off-ſets are conſiderably encreaſed in number, which, if permitted to remain ſo long as to encreaſe into large bunches, they will cramp each other in growth, and produce but ſmall ill-nouriſhed flowers.

It is alſo proper to remark, that all Bulbs taken up at the above period of reſt in ſummer, I ſhould adviſe, where practicable, to plant the principal part again the following autumn, in October or November, as they will flower much ſtronger than thoſe kept out of ground till ſpring.

BULBUS CAULINUS, a Cauline, or Stem-Bulb, i. e. Bulbs growing on the ſtem or ſtalk, oppoſed to thoſe before deſcribed, which grow only under-ground upon the root.

Theſe Stem-bulbous plants have alſo a Bulbous root under ground, from which ſprings the ſtem that produce the Cauline Bulbs here alluded to, which plants are denominated bulbiferous, or bulb-bearing; of this kind are ſeveral ſpecies of *Allium*, ſuch as common garlick, rocambole, and ſeveral others of that genus, bearing ſeveral Bulbs, or ſmall cloves, on the ſummit of the ſtem, at the origin of their umbel of flowers, which, being planted, freely grow, become plants, and bear Bulbs as above; ſo that theſe kinds of bulbiferous plants are encreaſed both by the off-ſets from the root or main Bulb under-ground, as well as thoſe elevated upon the ſtem: the ſame obtains in ſome ſpecies of lily, ſuch as the *Lilium Bulbifera*, the bulb-bearing and fiery lily; alſo often in ornithogalum, or ſtar of Bethlehem, and ſome other liliaceous plants, which emit bulbs at the wings or angles of the leaves.

By the ſituation of theſe kinds of Cauline Bulbs, on different parts of the ſtem, furniſh eſſential marks for diſtinguiſhing certain ſpecies.

BUPHTHALMUM, including the *Aſteriſcus*, or Ox-Eye.

This genus furniſhes herbaceous and ſhrubby plants proper for the embelliſhment of the pleaſure-ground and green-houſe, all of which are garniſhed with ſimple leaves, and compound, radiated, and moſtly yellow flowers.

Claſs and order, *Syngeneſia Polygamia Superflua.*

*Characters.*] CALIX, compound radiated flower, having an imbricated general cup, encloſing numerous florets. COROLLA, many hermaphrodite and female florets; the former compoſe the diſc, the latter the radius. STAMINA, in the hermaphrodite florets five filaments, having cylindric antheræ. PISTILLUM, in the hermaphrodite florets, an oval germen, ſingle ſtyle, and ſtigma; in the females a double-headed germen, ſimple ſtyle, and two ſtigmas. PERICARPIUM, none; a ſingle naked ſeed in each floret.

The ſpecies of moſt account are as follow: the firſt three are hardy herbaceous perennials of the full ground.

[1]BUPHTHALMUM *Helianthoides.*

*Helianthus-leaved American Ox-Eye.*] Buphthalmum with a perennial root, and annual ſtalks four or five feet high; oval-heart-formed, three-veined, ſawed leaves, placed oppoſite; and the branches terminated by large, radiated, yellow flowers, in leafy cups, appearing in July and Auguſt.

[2]BUPHTHALMUM *Salicifolium.*

*Willow-leafed Alpine Ox-Eye.*] Buphthalmum with a perennial root, and annual ſtalks about two feet high; ſpear-ſhaped, ſawed, hairy leaves, placed alternate; and the branches ending in radiated, bright, yellow flowers, in naked cups, appearing in June, July, and Auguſt.

[3]BUPHTHALMUM *Grandiflorum.*

*Smooth Willow-leafed Great-flowered Ox-Eye*] Buphthalmum with perennial roots; annual ſtalks two feet high; narrow, ſpear-ſhaped, ſmooth, ſlightly-indented leaves; and radiated yellow flowers, in naked cups, at the end of the branches.

The

The three following are of ſhrubby growth, and require ſhelter in winter.

[4]BUPHTHALMUM *Maritimum.*

*Maritime Sicilian Ox-Eye.*] Buphthalmum with a perennial root; very branching, perennial, firm ſtalks, about a foot high; wedge-ſhaped, hairy, alternate leaves; the branches crowned by radiated yellow flowers in blunt leafy cups, having foot-ſtalks, appearing moſt part of the year.

[5]BUPHTHALMUM *Fruteſcens.*

*Shrubby Ox-Eye of Jamaica.*] Buphthalmum with woody ſtalks and branches, riſing eight or ten feet high, adorned with ſpear-ſhaped, ſilvery, hoary leaves, of very different ſizes, placed oppoſite on foot-ſtalks, having two teeth near the baſe of each leaf, and pale yellow flowers in ſcaly cups from the ends of the branches, appearing from July until October.

*Variety.*] Shrubby Jamaica Ox-Eye with thick oblong leaves, having no teeth on the foot-ſtalk.

[6]BUPHTHALMUM *Arboreſcens.*

*Shrubby Bahama Ox-Eye.*] Buphthalmum with ſeveral ſhrubby ſtems directly from the root about a yard high, ligneous below, and ſucculent above, garniſhed with ſpear-ſhaped, thick, ſucculent, ſmooth, green leaves, placed oppoſite, and bright yellow flowers on longiſh foot-ſtalks at the ends of the branches, in July, Auguſt, and September.

*Variety.*] Shrubby Bahama Ox-Eye with hoary leaves.

All theſe ſix ſpecies are exotics, though the three firſt are hardy, the other three are tender; all of which flower here very ornamentally in ſummer and autumn, but rarely any but the three firſt ſorts afford ſeed in this country.

The firſt three ſpecies being hardy flowering perennials that proſper in any common ſoil, are proper furniture for the ornament of large gardens, in ſpacious borders, or in vacant ſpaces towards the fronts of the ſhrubbery compartments, where they will effect variety, and appear very ornamental ſeveral months in ſummer.

The fourth ſort, *Buphthalmum Maritimum*, or Sea Ox-Eye, requires ſhelter from froſt, ſo muſt be cultivated in pots, and in winter placed near a green-houſe or garden-frame, to have occaſional ſhelter in bad weather.

The fifth and ſixths ſorts and varieties require conſtant ſhelter of a green-houſe in winter, ſo muſt be always continued in pots, and placed to accompany the exotics of that department.

*Propagation of all the Sorts.*

The three firſt herbaceous kinds multiply freely by their roots, and by which they may be propagated abundantly in autumn or ſpring, either by taking off ſome ſlips from the roots, or to take them up, and divide them wholly into ſeveral parts, planting the ſlips in the places where it is deſigned they ſhall remain.

They may alſo be propagated plentifully by ſeeds, in a bed of common earth, in ſpring or autumn.

The Maritime ſort, and the other two ſhrubby kinds, are propagated eaſily by cutings of their branches, any time from April to July, planting them in pots of light earth, which, if plunged in a moderate hot-bed, will facilitate their rooting greatly, though thoſe planted in June and July will frequently emit roots tolerably well without that aſſiſtance, allowing occaſional ſhade and waterings.

After they are ſtruck, and advanced a little in growth, plant them in ſeparate pots, and let them remain in the full air till the end of October, then move them to the places of ſhelter before-mentioned.

BUPLEURUM, Hare's-Ear, and Shrubby Æthiopian Hartwort.

This genus retains both herbaceous and ſhrubby plants; the former poſſeſs little merit, but of the latter are two or three beautiful evergreen ſhrubs, one for the ſhrubbery, the others for the green-houſe.

Claſs and order, *Pentandria Digynia.*

*Characters.*] CALIX, umbelliferous flower, having a many-leafed involucrum to the general umbel, and to the ſmaller umbels but five leaves; the main umbel compoſed of about ten ſmaller ones, and ſcarce any calix to the florets. COROLLA, each floret compoſed of five whole inflexed petals. STAMINA, five filaments, and roundiſh antheræ. PISTILLUM, a germen below the corolla, two reflexed ſtyles, and minute ſtigmas. PERICARPIUM none, a roundiſh compreſſed two-parted fruit, having two oblong ſeeds.

The ſpecies that merit culture are,

[1]BUPLEURUM *Fruticoſum.*

*Shrubby Æthiopian Hartwort.*] Bupleurum with a ſhrubby ſtem, dividing into numerous branches, forming a buſhy head five or ſix feet high, adorned with oblong-oval, entire leaves, of a pale green colour, placed alternate,

nate, and yellow flowers in umbels at the ends of the branches, in July and Auguſt, ſometimes ſucceeded by ripe ſeeds.

[2]BUPLEURUM *Differme.*

*Shrubby Differme-leaved Cape Hare's-Ear.*] Bupleurum with a ſhrubby branching ſtem, growing five or ſix feet high, garniſhed with two-formed leaves, the ſpring leaves being decompounded of many plane finely-cut lobes, ſucceeded in ſummer by others that are long, narrow, ruſh-like, angular, and trifid, growing in cluſters, and greeniſh flowers in ſpreading umbels at the ends of the branches in July, ſucceeded by ſeeds in autumn.

[3]BUPLEURUM *Villoſum.*

*Shrubby Hairy Æthiopian Hare's-Ear.*] Bupleurum with a ſhrubby branching ſtalk five or ſix feet high; oblong, indented, hairy leaves, downy below, their baſe half embrace the ſtalks; and ſmall umbels of flowers at the ends of the branches in July.

The firſt of theſe ſpecies have great merit as a hardy evergreen for the ſhrubbery, though it was formerly retained as a green houſe plant, being deemed too tender to proſper in the full ground; but experience has proved it to be of a tolerable hardy temperature, ſo as to ſucceed in the open air all the year in a dry ſoil; and being a handſome buſhy ſhrub, makes a fine appearance in the fronts of the ſhrubbery clumps.

The ſecond and third ſpecies being tender, muſt always be retained in pots, to have ſhelter of a green-houſe in winter; ſo muſt be allowed a place among the green-houſe exotics.

*Propagation.*

All the ſorts may be propagated both by ſeeds and by cuttings.

The ſeeds may be ſown in autumn ſoon after they are ripe in pots of light mould, placing them in a frame, to have ſhelter from froſt in winter, and in ſpring plunge them in a hot-bed, particularly the two green-houſe kinds, which will ſoon bring up the plants; theſe are to be innured to the full air, and tranſplanted into ſeparate ſmall pots, giving ſhade and occaſional waterings all ſummer; and in October placed in a green-houſe or frame; and in April following thoſe of the firſt ſort may be planted out in the nurſery.

By cuttings they may be raiſed in ſpring in pots of light earth, plunging them in a moderate hot-bed, where they will readily take root.

But the common Shrubby Æthiopian Hartwort may alſo be raiſed by cuttings in the common ground, planted in July, Auguſt, or September, and ſheltered occaſionally from froſt during winter; or they may be planted in pots at the above time, and placed in a garden-frame for occaſional ſhelter from froſt; and in either method the cuttings will emit roots in the ſpring, giving water freely all ſummer, and ſhelter again in winter; and in ſpring following plant them out in a ſheltered place in the nurſery.

BUTOMUS, Flowering Ruſh, or Water Gladiole.

There is but one ſpecies, an herbaceous, flowery, perennial aquatic, of tall growth, crowned by umbellate flowers.

Claſs and order, *Enneandria Hexagynia.*

*Characters.*] CALIX, umbellate flowers in a ſingle umbel, having a three-leaved involucrum. COROLLA, each floret of the umbel is compoſed of ſix roundiſh concave petals. STAMINA, nine awl-ſhaped filaments, and double lamellated antheræ. PISTILLUM, ſix oblong pointed germina, and ſingle ſtigmata. PERICARPIUM, ſix oblong pointed capſules, having ſingle cells filled with oblong ſeeds.

The ſpecies is,

BUTOMUS *Umbellatus.*

*Umbellated Butomus.*] Butomus with a thick, oblong, fibry root, crowned by many long flaggy leaves, and a thick, ſtrong, ſmooth flower-ſtalk, from three to five or ſix feet high, ornamented at top by a large umbellate cluſter of flowers, in June and July, ſucceeded by abundance of ſeed.

*Varieties of this are*] White-flowering Butomus—Red-flowered Butomus—Deep-purple-flowered Butomus.

Theſe plants are acquatics, and adorn our river-ſides, and other watery places, in moſt parts of Britain; but as they produce very ornamental flowers, all the varieties merit culture in gardens, accommodated with ſituations properly adapted for their growth, ſuch as in very moiſt places, by the ſides of any piece of water, rivulet, or any place of copious moiſture, where the roots may be moſtly in water, particularly any boggy or marſhy part, where theſe and ſeveral other of the aquatic tribe may be introduced, which will flouriſh, and render ſuch places very ornamental.

Their propagation may be effected by ſeed, or by the roots.

By ſeed, it may be ſowed thick in any watery or boggy place, as above, as ſoon as it is ripe, and left to nature. By roots, they may be removed any time after flowering, and

ſuch

ſuch that admit of it, may be divided, planting them at once in the places allotted them, where they will abide for years, and flower annually.

BUXUS, the Box-tree.

The plants of this genus are hardy evergreen ſhrubs, well calculated for ornamental purpoſes in ſhrubbery works, &c. of which there are but two ſpecies, one of them a large ſhrub, that admits of ſeveral beautiful varieties proper for evergreen plantations; the other is alſo a pretty evergreen of very dwarfiſh growth, but its chiefeſt merit is, for forming edgings to flower-beds and borders, for which purpoſe it is ſuperior to all other plants.

The wood of the large ſort is alſo of ſingular value for innumerable different ſorts of curious utenſils.

Claſs and order, *Monoecia Tetrandia*.

*Characters.*] CALIX, male and female flowers; the males have a three, and the females a four concave-leafed cup. COROLLA, in the males two, and the females three ſmall concave petals. STAMINA, the males have four filaments, and double antheræ. PISTILLUM, the females have a roundiſh trigonous germen, three ſhort ſtyles, and hiſpid ſtigmas. PERICARPIUM, a roundiſh trilocular capſule, each cell having two oblong ſeeds.

The ſpecies are,

[1]BUXUS *Arboreſcens*.

*The Tree-Box.*] Buxus with a tree-like ſtem, dividing into numerous branches, forming a regular head, growing twelve or fifteen feet high, and very cloſely adorned with ſmall ſtiff ſhining leaves.

*Varieties of this.*] Tree-Box with oval leaves, or Broad-leaved Tree-Box—Tree-Box with narrow leaves, or Narrow-leaved Tree-Box—Silver-ſtriped-leaved Tree-Box———Silver-edged-leaved Tree-Box—Gold-ſtriped Tree-Box—Gold-edged Tree-Box——Gold-tipped Tree-Box—Curled-leaved Striped Tree-Box.

[2]BUXUS *Suffruticoſa*.

*Dwarf Shrubby Box.*] Buxus with many ſmall, ſhort, very branchy ſtems, immediately from the root, riſing a foot and half high, cloſely adorned from the very bottom with ſmall, round, ſtiff leaves.

*Varieties.*] Dwarf Shruby Green Box—Dwarf Shrubby Striped Box.

The flowers of all theſe plants are very inconſiderable, ſo that the beauty of the ſhrubs conſiſts in their numerous, ſhining, evergreen leaves.

All the ſorts are ſo hardy, that they proſper in any expoſure and ſoil, and no weather injures them.

The firſt ſpecies, *Buxus Arboreſcens*, and its varieties, being of beautiful growth, are elegant furniture for the ſhrubbery plantations, for having numerous branches, very cloſely garniſhed with their ſmall ſhining leaves, effect a very ſtriking and agreeable contraſt at all ſeaſons, in aſſemblage with the larger-leaved evergreens.

This ſhrub is alſo ſometimes uſed in forming low evergreen hedges for ornament, and is likewiſe ſometimes planted as ſingle objects, trained into pyramids, globes, &c.

This ſort merits culture alſo for its wood, which, being very hard, is of ſingular uſe to the mathematical-inſtrument-makers, engravers, and turners, for making innumerable ſmall utenſils.

The wood is ſo compact and heavy, that it will ſink in water.

If therefore any one would cultivate this tree for its wood, may plant it on almoſt any dry poor ſoil, even on the declivities of chalky or gravelly barren hills, where they will grow freely, as is evident by the vaſt numbers that adorn Box-hill in Surry, about twenty miles from London, which bring a conſiderable income to the owner; and what is remarkable, the wood is ſold by weight, at ſo much per pound, which renders it ſtill more valuable to the cultivator.

The ſecond ſpecies, Dwarf Shrubby Box, is a valuable little plant, for its uſefulneſs in forming edgings to beds and borders, for which uſe there is no plant ſo proper, it fixes its roots ſo firmly in the ground, and its branches coming out ſo thick and cloſe to the very ſurface, that it anſwers effectually the purpoſe of a beautiful edging, and of ſecuring the earth of the beds or borders from being forced out, either by heavy rains, or doing the neceſſary work; ſo that, as an edging, it is both uſeful and ornamental.

It may alſo be trained as a dwarf ſhrub, permitting it to take its natural growth, when it will make proper furniture for the fronts of ſmall clumps.

This ſort is alſo by the gardeners about London trained in different figures, as globes, pyramids, and the like, for market, which, as it bears the ſmoke, is proper to plant in pots, to adorn court-yards and balconies.

*Propagation of all the Sorts.*

The Tree-Box and varieties may be raiſed abundantly by ſeeds, layers, and cuttings, though

though the two latter are the methods by which they are moſt commonly propagated, and indeed is the only method of propagation for the variegated ſorts, ſo as to continue the different kinds with certainty.

If it is however intended to raiſe the common green ſort by ſeed, ſow it in autumn ſoon after they ripen, in a border of light earth half an inch deep, and the plants will come up in ſpring, and in two years will be fit to plant out in the nurſery-lines.

To encreaſe them by layers, it may be done any time in the year; but from Michaelmas to March is the moſt eligible ſeaſon.

Cuttings of all theſe tree ſorts may be planted in autumn, or even any time in winter or ſpring, but the ſooner the better: chuſe ſhoots of one or two year's wood, about eight, ten, or twelve inches long; plant them in a ſhady border half way in the earth, and ſix inches diſtance, and give water in dry weather.

The Dwarf Box propagates very plentifully by numerous off-ſets or ſuckers from the roots, which may be parted any time from September to April, or even later, upon occaſion; obſerving, thoſe of them you intend to train as ſhrubs, are to be planted ſingly in rows in the nurſery a foot aſunder; but when intended for edgings, they are to be planted cloſe to one another, in the following manner.

*Of planting the Dwarf Sort for Edgings.*

As before noticed, the Dwarf Box is the beſt plant for edgings, and its propagation is effected abundantly by dividing the plants into as many parts as are furniſhed with fibres; alſo the ſlips of the branches, having no roots, will grow, but as the plants encreaſe greatly from the bottom, furniſhed with plenty of fibres, and are eaſily parted, it is moſt adviſeable for edgings, to uſe entirely thoſe ſlips that are provided with roots.

For the purpoſe of edgings, ſuch plants as are ſhort and buſhy are to be preferred, rejecting ſuch as have long, naked, ſticky ſtems and branches, and preference is to be given to thoſe whoſe roots are ſhort and very fibrous.

The plants are cultivated for ſale, purpoſely for edgings, in many places, particularly in the nurſeries and other gardens about London, which being planted in cloſe rows in the manner of edgings, is commonly ſold by meaſurement, generally from three-pence to ſix-pence per yard, running meaſure, and one yard of good cloſe Box will, when parted, plant three or four.

In ſlipping or parting the Box for edgings, it is not proper to divide it into very ſmall ſlips, and, if poſſible, let each ſlip be furniſhed with fibres; for although the naked or rootleſs ſlips will grow, they are improper to be planted with the rooted plants, becauſe many may fail, and occaſion gaps in the edging. The plants when ſlipped ſhould be trimmed at root and top, cutting off or ſhortening long ſticky roots, and only trim the ſtraggling tops even; but by no means cut them too cloſe to appear ſtumpy.

The manner of planting the edging is this.

To plant a cloſe regular Box-edging, the edge of the bed or border which is to be planted muſt be made up full and even by line, then a ſlight trench muſt be cut about ſix inches deep, in which to plant the Box almoſt to the top, obſerve the following directions.

In the firſt place, proceed to ſtake out the intended width of your border, walk, &c. and place for the edging; then, if not done before, dig the edge along full and regular, and directly tread the top evenly all the way, to ſettle the earth equally, that it may not ſink in hollows hereafter; then, having previouſly marked on the ſtakes the proper height and level for the edging, ſtretch a line, if for ſtraight work, along the edge, agreeable to the ſaid mark of level, and with a ſpade make up the ground even to the line, finiſhing it level and ſmooth about a ſpade's-breadth all the way along the top; this done, ſtrain the line tight, and proceed to cut out a ſlight neat trench for the reception of the edging: the trench muſt be cut on the walk-ſide of the line, about ſix inches deep, cutting the ſide next the line nearly perpendicular, and as even as poſſible, turning the earth thereof towards the walk or alley, and it is then ready for the plants.

The Box being trimmed, as before directed, proceed to planting, placing the plants cloſe againſt the upright ſide of the trench, and ſo cloſe together, as at once to form a cloſe and regular edging, with the tops all of an equal height even with the line. As you proceed in planting, draw with the hand a little earth up to the plants, juſt to fix them in due poſition till the line or row is finiſhed, then with the ſpade trim in the remainder of the

earth almoſt even with the tops of the edging, and preſs it evenly thereto with the foot, to fix the plants as they are to remain, and the work is finiſhed.

When the edging is thus planted, obſerve, if there are any irregular parts, projecting either on the ſides or top, to go over it lightly with the garden-ſhears, and trim off any ſuch irregularities.

If theſe edgings are planted late in the ſpring, or early in autumn, while the dry hot weather continues, it will be neceſſary to give occaſional waterings, but more particularly thoſe planted late in ſpring.

The planting of Box-edgings may ſeem a tedious work to thoſe of little practice; but an expert hand will plant many yards in a day. The jobbing-gardeners about London are extremely clever at this work, they having great practice; for thoſe kind of edgings ſtill prevail greatly in the numerous pleaſure or flower-gardens in the environs of that city. I have known ſome of theſe gardeners for a wager plant ſixty yards in an hour, previouſly, however, preparing the trench, and trimming the box ready for planting.

As to the general culture of theſe Box-edgings, it conſiſts principally in clipping or ſhearing them with garden-ſhears once a year at leaſt, to continue them in regular order, and within due bounds, in reſpect to height and breadth, for they ſhould not be ſuffered to grow above three or four inches high, nor more than about two broad, for if more than that, they aſſume a clumſey appearance; beſides, when permitted to grow high and thick, they afford harbour for ſlugs, ſnails, and other deſtructive vermin.

The time of year to clip or ſhear theſe edgings is June; this is to be underſtood of thoſe that are cut once a year; but to have them extremely neat, they ſhould be clipped twice in the ſummer, i. e. May, and the beginning or middle of Auguſt.

It is adviſeable to clip them in moiſt weather, as they then cut freer, and the beauty of the edging is better preſerved, than when ſhorne in a dry and hot time, which is apt to occaſion the leaves to turn brown, and have a ruſty unſightly appearance for a long time. The ſame alſo happens when cut early in ſpring while froſty nights prevail.

When any of theſe edgings are grown very broad and clumſey, they ſhould be taken up, ſlipped or parted, and replanted in a compact neat edging, as above directed. The ſame ſhould likewiſe be practiſed to ſuch edgings as have large gaps in different parts, and ſuch alſo that are irregular by having high and low places, and where the plants have become naked and ſtubby.

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# C.

CACALIA, Foreign Colt's-foot.

This genus furniſhes ſome hardy, herbaceous, tall, flowery perennials of the common ground, and ſome of ſhrubby growth for the green-houſe, garniſhed with ſimple leaves, and compound flowers in umbels at the ends of the ſtalks and branches.

Claſs and order, *Syngeneſia Polygamia Æqualis.*

*Characters.*] CALIX, compound flowers, having many florets included in an oblong, ſcaly, general cup. COROLLA, ſeveral tubulous funnel-ſhaped florets five-parted at top. STAMINA, five ſmall filaments, and cylindric antheræ. PISTILLUM, an oblong germen, ſlender ſtyle, and two oblong revolute ſtigmas. PERICARPIUM none, a naked ſeed in each floret, crowned with down.

The ſpecies that merit culture are as follow: the three firſt ſpecies are hardy herbaceous perennials.

1 CACALIA *Alpina.*

*Alpine Purple Cacalia.*] Cacalia with fleſhy ſpreading roots, ſending up many kidney-ſhaped, thickiſh, indented leaves, on ſingle foot-ſtalks, and amongſt them the flower-ſtalk a foot and half high, branching upward, and all the branches terminated by umbels of purpliſh flowers, three in each cup.

*Varieties.*] Alpine Purple Cacalia with hoary leaves——with hairy thick leaves——ſmooth green leaves.

2 CACALIA *Suaveolens.*

*Sweet-ſcented Canada Cacalia.*] Cacalia with ſtrong very-ſpreading roots; ſtrong, erect, annual ſtalks ſix or ſeven feet high, garniſhed with

with triangular, ſpear-ſhaped, indented leaves, placed alternate, and white flowers terminating all the ſtalks in umbels.

[3]CACALIA *Atriplexifolia.*

*Atriplex-leaved Virginia Cacalia.*] Cacalia with a thick root, having many tubers, ſending up ſtrong annual ſtalks four or five feet high, adorned with roundiſh, heart-ſhaped, ſinuated, alternate leaves, and yellowiſh flowers crown the ſtalks in umbels, having five florets in each cup.

The above three ſpecies flower annually in June, July, and Auguſt, ſucceeded by plenty of ſeeds in October, when their ſtalks die to the ground, and new ones riſe in ſpring.

The four following are ſhrubby ſucculent exotics of the green-houſe.

[4]CACALIA *Ficoides.*

*Shrubby Fleſhy-leaved African Cacalia.*] Cacalia with ſhrubby, ſtrong, ſucculent ſtems and branches, growing ſeven feet high; fleſhy, taper, lance-ſhaped, pointed, compreſſed, powdered leaves; and white flowers in ſmall umbels at the ends of the branches, in autumn, winter, or ſpring.

[5]CACALIA *Kleinia.*

KLEINIA, *India Cacalia, or Cabbage-tree.*] Cacalia with a ſhrubby, thick, ſucculent ſtalk and branches, compoſed of many ſwelling diviſions or joints; long, narrow, ſpear-ſhaped leaves, their foot-ſtalks leaving ſcars; and carnation-coloured flowers in large cluſters at the ends of the branches, from Auguſt to October.

[6]CACALIA *Anteuphorbium.*

*Anteuphorbium, or Shrubby Æthiopian Cacalia.*] Cacalia with many ſhrubby, ſlender, ſucculent ſtalks, branching irregularly; oval-oblong, flat, ſucculent, alternate leaves, having three lines at the baſe of the foot-ſtalk.

[7]CACALIA *Papillaria.*

*Shrubby Papillary Cacalia.*] Cacalia with a ſhrubby, large, ſucculent ſtalk, branching irregularly; and narrow ſucculent leaves, their foot-ſtalks remaining on the branches like thorns.

The three firſt ſpecies and varieties are very hardy herbaceous perennials of the flowery tribe, which although not of any ſtriking beauty, are proper furniture for large pleaſure-grounds, to encreaſe the variety in ſpacious borders, or in the clumps between deciduous ſhrubs, or the border of ſhady walks, &c.

Their propagation is by dividing their roots any time in autumn, winter, or ſpring.

They may alſo be raiſed abundantly by ſeeds, either ſown, or permitted to ſcatter which, by means of their downy pappus, are often wafted to a conſiderable diſtance, and where they fall come up freely.

The four ſhrubby ſucculent ſorts, requiring a green-houſe here all winter, muſt always remain in pots of light ſandy earth, giving moderate waterings in ſummer, but as little as poſſible in winter, as being of a very ſucculent nature.

Theſe plants being ſingular in their growth, merit a place in every curious collection.

Their propagation is eaſily effected by cuttings of their branches, any time from March to July. Let the cuttings be five or ſix inches long, permitting them to lie a fortnight to heal the cut part; then plant them in pots of light mould, which you may plunge in a moderate hot-bed; though thoſe planted in ſummer generally take root freely without ſuch aſſiſtance.

CACTUS, *Melo-Cactus*, Melon-Thiſtle; Includes alſo the *Cereus*, or Torch-Thiſtle, and the *Opuntia*, or Indian Fig.

This genus furniſhes a curious collection of ſucculent exotics, of ſingularly ſtrange and different growths, inhabitants of the hot parts of America, and retained here for curioſity in our ſtoves and green-houſes.

Claſs and order, *Icoſandria Monogynia.*

*Characters.*] CALIX, a monophyllous, tubular-concave, deciduous cup. COROLLA, many broad obtuſe petals, the exterior ones ſhort, the inner ones largeſt and connivent. STAMINA, numerous filaments inſerted in the calix, and erect antheræ. PISTILLUM, a germen below the receptacle, cylindric ſtyle, and headed multifid ſtigma. PERICARPIUM, an oblong baccaceous fruit of one cell, having numerous ſeeds.

As the *Melo-Cactus*, or Melon-Thiſtle, aſſume very different ſtructures and appearances from the *Cereus*, or Torch-Thiſtle, and the *Opuntia*, or Indian Fig, many ſtill conſider them as three different genera; but their characters being the ſame, Linnæus ranges them all in the genus *Cactus*, under which we ſhall alſo place them, though, for diſtinction ſake, in three different claſſes, i. e. the *Melo-Cactus*, or Melon-Thiſtle; the *Cactus-Cereus*, or Torch-Thiſtle; the *Cactus-Opuntia*, or Indian-Fig.

*Firſt Claſs, the Melo-Cactus, or Melon-Thiſtle.*

The ſpecies of *Cactus* called Melon-Thiſtle, are plants of very ſingular ſtructure, being ſhaped like a great melon, having neither

viſible ſtem, branches, nor leaves, but appear like a large roundiſh fleſhy maſs or lump, ſitting cloſe to the earth, growing a foot or more high, ſome deeply ribbed longitudinally, and all of them cloſely armed with robuſt thorns, and ſome are crowned with a large tuft of downy matter, intermixed with ſharp ſpines.

There are but two real ſpecies of this ſort, which are,

[1]CACTUS *Melo-Cactus.*

*Great Melon-Thiſtle.*] Cactus with a roundiſh body a foot or more high, having fourteen or fifteen longitudinal angles or ribs, each beſet with nine or ten very thorny tubercles, and at top a large downy prickly crown, from which iſſue the flowers and fruit.

*Varieties.*] Great Melon-Thiſtle with ſtraight angles——with angles ſpirally twiſted——with contorted angles——with broad recurved ſpines.

[2]CACTUS *Mammillaris.*

*Mammillary, or Smaller Melon-Thiſtle.*] Cactus with a roundiſh oblong body near a foot high, cloſely covered with ſmooth tubercles, each armed with brown thorns diſpoſed in a radius, and between the tubercles whitiſh flowers in Auguſt, ſucceeded by oblong crimſon fruit ripening in winter.

*Variety.*] Small Melon-Thiſtle with white ſpines.

All the ſorts are perennial both in root and top, and are of many years duration.

Theſe very ſingular plants are natives of America, growing in the crevices of rocks, having ſcarce any earth for their ſupport, where the firſt ſort grows near a yard high, and half a one or more in diameter.

In this country they are preſerved as plants of curioſity, and require the conſtant accommodation of our beſt ſtoves, and muſt be planted in pots of light ſandy earth, placing them upon the top of the flues or ſhelves in winter, and in the bark-bed in ſummer, giving but very moderate watering in the hotteſt weather, and none at all in winter, they being of themſelves very ſucculent and replete with moiſture.

*Their Propagation.*

The propagation of theſe plants in England is by ſeed, in pots of light ſandy earth, plunged in the bark-bed, where they will ſoon come up, which, after having advanced a little in growth, ſhould be pricked in ſeparate very ſmall pots, plunging them alſo in the bark-bed, and they will make great progreſs, though it will be ſome years before they acquire any conſiderable ſize.

Young plants ſometimes iſſue from the ſides of the old ones; theſe may be taken off and planted, managing them as above.

But ſome, to have large plants as ſoon as poſſible, procure them from the Weſt-Indies in tubs of dry rubbiſhy compoſt, being careful during the voyage to guard them from cold and every ſort of moiſture, and as ſoon as they arrive, plant them in pots, and plunge them in the bark-bed till rooted.

*Second Claſs.*

CACTUS CEREUS, the *Cereus*, or Torch-Thiſtle, and Creeping Cereus.

This claſs conſiſts alſo of ſucculent perennial exotics of America, of ſingular ſtructure and port, and retained here for variety in our ſtoves.

Claſs, order, and characters, the ſame as the *Cactus Melo Cactus.*

The Cactus of this claſs are vaſtly different in ſtructure and general habit from thoſe of the preceding; thoſe of this claſs advance with long, angulated, naked, ſucculent ſtalks; ſome erected ſingly like a column to thirty or forty feet in height, having neither branches nor leaves; others are of creeping growth, with long, climbing, rooting ſtalks, branching and mounting themſelves upon ſupport to a great diſtance, and ſome trail upon the ground; all of which are for moſt part leafleſs, but moſt of them produce moſt elegant multipetalous flowers, which, in ſome of the climbing kinds, are of wonderful ſize and beauty, ſpreading like an umbrella a foot or more in diameter; and what is more remarkable, they appear only on nights, and which being ſo extremely fugaceous, that, opening fully about ten or eleven o'clock, they continue expanded three or four hours, then begin to ſhut and fade, and by ſix or ſeven in the morning are quite cloſed, hang drooping, and in a manner withered and decayed, never opening any more, though they are often ſucceeded by freſh ones on the ſame plant the following night; and thoſe of all the ſorts, in their native ſoil, are ſucceeded by a large, roundiſh, eatable fruit, but rarely ripen in perfection here.

They are preſerved here in many of our hot-houſes as curioſities, and, as ſuch, highly demand the attention of the curious.

The

The ſpecies of this claſs are,

[1]CACTUS-CEREUS *Hexagonus.*

*Great Upright Sexangular Torch-Thiſtle.*] Cactus with an upright, ſexangular, ſtrong, fleſhy, branchleſs ſtalk or column, growing thirty or forty feet high, armed with ſpines in radiated cluſters; and from the angles large white flowers in prickly cups on thick fleſhy foot-ſtalks, appearing in July, but rarely any fruit in England.

[2]CACTUS-CEREUS *Tetragonus.*

*Upright Smaller Quadrangular Torch-Thiſtle.*] Cactus with an upright, four-angled, fleſhy ſtalk, five or ſix feet high, ſending out many erect ſide-ſhoots, the angles compreſſed and armed with cluſters of ſpines.

[3]CACTUS CEREUS *Pentagonus.*

*Upright Pentangular Torch-Thiſtle.*] Cactus with an upright, five-angled, jointed column, twelve or fifteen feet high, having the joints far aſunder, and the angles armed with ſpines.

[4]CACTUS-CEREUS *Heptagonus.*

*Upright Septangular Torch Thiſtle.*] Cactus with an upright, oblong, ſeven-angled, fleſhy ſtalk, having the angles armed with ſpines.

[5]CACTUS-CEREUS *Repandus.*

*Upright Repand-octangular Torch-Thiſtle.*] Cactus with an upright, ſomewhat ſlender, eight or nine-angled ſtalk, the angles compreſſed and undated, armed with cluſters of ſpines at a diſtance, and greeniſh flowers in June, ſucceeded by large yellowiſh pear ſhaped fruit, ſometimes ripening in England.

[6]CACTUS-CEREUS *Peruviana.*

*Upright Peruvian Octangular Torch-Thiſtle.*] Cactus with an upright, eight or nine angled, fleſhy ſtalk, twenty or thirty feet high, the angles ſlight, obtuſe, and ſpinous, flowering in July, ſucceeded by a reddiſh, ſmooth palatable fruit.

[7]CACTUS-CEREUS *Lanaginoſus.*

*Upright Novem-angular Downy Torch-Thiſtle.*] Cactus with an upright, ſlightly nine-angled, thick, fleſhy, downy ſtalk, many feet high, armed with ſpines ſhorter than the down.

[8]CACTUS CEREUS *Royeni.*

*Royen's Upright Decem-angular Torch-Thiſtle.*] Cactus with an upright, articulated, ten-angled, fleſhy ſtalk, the articuli or joints oval, and the ſpines and down of equal length.

The following are the creeping Torch-Thiſtle.

[9]CACTUS-CEREUS *Grandiflorus.*

*Climbing Pentangular Grand-flowered Torch-Thiſtle.*] Cactus with climbing, five-angled, jointed, ſlender, branchy ſtalks, rooting at the joints, and extend conſiderably, producing grand, ſnowy white flowers, having large bright-yellow cups, expanding almoſt a foot diameter, of ſplendid beauty and moſt fragrant odour, opening in an evening, and by next morning are cloſed, hang drooping, and decay.

[10]CACTUS-CEREUS *Triangularis.*

*Climbing Triangular Torch-Thiſtle.*] Cactus with climbing, three-angled, jointed, ſlender, branchy, prickly ſtalks, rooting at the joints, and extend to a great diſtance, producing large, beautiful, nocturnal flowers, decaying next morning.

[11]CACTUS-CEREUS *Flagelliformis.*

*Trailing Decem-angular Flagelliform Torch-Thiſtle.*] Cactus with trailing, finely ten-angled or fluted, long, ſlender, prickly ſtalks, not jointed, rooting, nor climbing, but, if not ſupported, extend along the ground, producing many elegant bright-purple flowers annually in May of two or three days duration.

In all the ſorts, the flowers are compoſed of many broad petals, and each flowers ſtand on a ſhort foot-ſtalk.

All theſe ſpecies of *Cactus Cereus*, or Torch-Thiſtle, are ſucculent perennial exotics of the ſtove, perennial both in root and top, continuing their growth many years, always aſſuming a green colour.

They are all natives of the warm parts of America, and in this country require a ſtove; muſt therefore be always kept in pots of light, dry, ſandy earth, and continued conſtantly in that department; for, although they will live in the open air in hot weather in ſummer, they are too apt to imbibe moiſture, and being themſelves very humid, may occaſion them to rot, nor will they ſo certainly flower as when retained in the ſtove.

Be ſure always to pot them in light dry earth, and give them but very moderate waterings in ſummer, and very little, or none at all, in winter.

The upright kinds arrive to a great height in America; and in this country, in our ſtoves, they often obtain ten or fifteen feet ſtature, and were there room, they would apparently grow ſeveral feet higher; but when they reach the top, we are obliged to ſhorten them, in which caſe they iſſue forth ſide-ſhoots, proceeding in an upright direction like the main ſtem, and, if taken off and planted, they readily emit roots, and become proper plants.

The

The creeping kinds will alſo extend themſelves conſiderably, provided they have ſupport, ſo ſhould be placed near the walls of the ſtove, and their branches trained thereto, which, of the *Grandiflorus* and *Triangularis* kinds, will root in the plaiſter-work as they aſcend.

Moſt of the ſpecies, both the upright and creeping kinds, produce flowers in this country, though not all of them annually, and ſome not in two, three, or more years; for they have no certain period of flowering here, and the flowers are very rarely ſucceeded by fruit.

No flowers however are, at any rate, to be expected till the plants have obtained ſeveral years growth, to acquire due ſtrength.

The firſt and twelfth of theſe ſpecies are the hardieſt of all, and may be preſerved in a good green-houſe, giving no water in winter, and will endure the open air from June till September, but rarely flower well unleſs indulged with a ſtove.

*Propagation of all the Sorts.*

They are all propagated by cuttings of their ſtems and branches, in pots plunged in a bark-bed or other hot-bed, in May, June, or July.

When intended to propagate any of the upright ſorts, ſuppoſing the plant to have only one ſtem and no ſide-ſhoots, there is no other method of encreaſing it than by cutting off the top to what length you pleaſe, which cutting, after lying in a dry place about a fortnight to heal the ſucculent wound, is to be planted in a pot of light compoſt, and plunged in the bark-bed, &c. and it will readily ſtrike root and grow. The remaining part of the old plant, from which the above cutting was taken, will ſoon put forth lateral ſhoots, which, when from three to ſix or eight inches long, may be taken off, and planted ſingly in pots, as above directed, and the old plant continues to furniſh a ſupply of freſh ſhoots annually.

The creeping kinds having ſeveral ſtalks and branches, may be propagated plentifully, taking off cuttings of them from about three to five or ſix inches long, treating them as above.

Cuttings of all theſe plants will keep two or three months out of the earth, in a dry place, if neceſſary.

*Third Claſs.*

[12]CACTUS-OPUNTIA, the *Opuntia*, or Indian Fig, or Prickly Pear.

This claſs of Cactus conſiſts alſo of curious ſucculent exotics, moſtly of American growth, and require the aid of green-houſes and ſtoves in this country.

Claſs, order, and character, the ſame as the CACTUS *Melo-Cactus*.

The plants of this claſs are compoſed of a multitude of thick, fleſhy, compreſſed, prickly leafleſs branches, growing out of one another in many oval and oblong articuli or joints, ſome compreſſed or flat, others ventricoſe or bellied; ſome looſely diſpoſed and ſpread near the ground, and ſome grow erect; all the ſorts producing multipetalous concave flowers from the ſurface and upper edge of all the articulations, ſucceeded by large, oblong, ſucculent, fig-ſhaped, prickly fruit, which in ſome of the ſorts ſometimes ripen in our gardens.

The plants in general are perennial in root, ſtem, and branches, have ſcarcely ever any leaves, but their ſucculent branches always aſſume a green colour.

The ſpecies of this claſs are,

[1]CACTUS-OPUNTIA *Opuntia*.

*Common Opuntia, or Indian Fig.*] Cactus with low, ſpreading, looſe branches, compoſed of many oval compreſſed joints, having knots on the ſurface, armed with ſlender briſtly ſpines, and yellow flowers at the upper parts of the articuli, ſucceeded by oblong, prickly, purple fruit, ſometimes ripening in England.

[2]CACTUS-OPUNTIA *Ficus Indica*.

*Greater Common Indian Fig.*] Cactus with many ſomewhat erect branches, compoſed of many oblong, oval, compreſſed joints, armed with long briſtly ſpines in radiated cluſters, and yellow flowers from the edges of the articuli, ſucceeded by large, purple, prickly fruit.

[3]CACTUS-OPUNTIA *Tuna*.

*Tuna Major, or Great Indian Fig.*] Cactus with erect ſtrong branches ſeveral feet high, compoſed of many large oval articulations, armed with numerous cluſters of long awl-ſhaped ſpines, and yellowiſh flowers.

[4]CACTUS-OPUNTIA *Cochinillifer*.

*The Cochineal Great Indian Fig.*] Cactus with erect, ſtrong, very green, articulate branches, riſing eight or ten feet high, compoſed of many oval, oblong, compreſſed, ſmooth articuli, almoſt without ſpines, and ſmall purpliſh flowers from the ſurface, ſucceeded by a large ſucculent fruit, having a blood-red pulp, on which feeds the cochineal inſect, ſo valuable in dying ſcarlet colour.

Upon

Upon this ſpecies, which is a native of Mexico and the Weſt-India iſlands, is found the inſect or bug called cochineal, which is uſed by the dyers as their principal baſis for ſcarlet colour. It is a ſix-legged viviparous inſect, produced from an egg in its perfect form, not undergoing any transformation: it has no wings, nor, indeed, has it uſe for any, the greateſt part of its life being ſpent on the vegetable whereon it feeds.

[5]CACTUS-OPUNTIA *Curaſſavicus.*

*Low Ventricoſe Opuntia of Curaſſoa, or Pin-pillow.*] Cactus with low, ſpreading, jointed branches, compoſed of many cylindric, very ſwelling, ventricoſe or bellied articulations, cloſely ſet with white ſpines; by the Americans is called Pin-pillow.

[6]CACTUS-OPUNTIA *Spinoſiſſima.*

*Moſt Spinous Opuntia, or Robinſon Cruſoe's Coat.*] Cactus with jointed branches, compoſed of very long, narrow, compreſſed joints, very cloſely armed with cluſters of long, ſlender, browniſh ſpines, croſſing each other every way; hence ſometimes called Robinſon Cruſoe's Coat.

[7]CACTUS-OPUNTIA *Periſkia.*

*Periſka, or American Gooſeberry.*] Cactus with a woody, taper, prickly ſtem; ſlender, ſpreading, ſucculent branches, armed with long whitiſh ſpines; lancelate-oval, thick, ſucculent leaves, whitiſh flowers, and a gooſeberry-ſhaped fruit.

[8]CACTUS-OPUNTIA *Phyllanthus.*

*Sword-blade Notched Opuntia.*] Cactus with many long, articulate, ſmooth, ſpineleſs branches, compoſed of long, ſword-ſhaped, very flat, thin joints, having repand indented edges, and from the indentures many pale yellow flowers.

Theſe are all the principal ſpecies of the Cactus-Opuntia cultivated in the Britiſh gardens.

The firſt of theſe ſpecies, *Common Opuntia*, is the hardeſt of all the ſorts, as it may be preſerved in England by the ſhelter of a green-houſe or garden-frame in winter, and it will ſometimes live all the year in the full ground under a warm wall; it is however proper to keep ſome in pots, to have ſhelter from froſt.

All the other ſorts require a ſtove moſt part of the year; for, although they will live in the full air two or three months in ſummer, and in a good green-houſe in winter, they, for want of a due temperature of warmth, are apt to aſſume a yellowiſh hue, and gradually dwindle off; but when kept moſtly in the ſtove, they always retain their reſpective natural green colour, and are more prolific in their flower and fruit: they, however, at any rate, muſt never be fully expoſed, but only two or three months in the heat of ſummer, and but very little in wet ſeaſons.

All the ſorts ſhould always be continued in pots of light ſandy ſoil, or dry rubbiſhy compoſt, giving frequent light waterings in ſummer, and alſo now and then lightly in winter, eſpecially thoſe in the ſtove.

*Their Propagation.*

They are propagated very eaſily by cuttings or joints of their branches, which may be taken off and planted in pots of light ſandy compoſt any time from the beginning of May to the end of July, but the ſooner the better.

The cuttings are to be cut off in joints, which, previous to planting, muſt, like other ſucculents, be laid in a dry place ten or fifteen days, to heal over the cut part; then plant them in pots as above, and if the hot-houſe kinds are then plunged in the bark-bed, or other hot-bed, it will greatly promote their rooting; but the green-houſe ſort, Common Opuntia, will readily ſtrike root without that aid, though they may be greatly forwarded by ſuch aſſiſtance, giving all the ſorts now and then moderate waterings, juſt to moiſten the earth a little.

CALENDULA, the Marigold.

This genus of plants conſiſts of herbaceous buſhy annuals, one low perennial, and one ſhrubby plant: the former compriſes hardy culinary herbs and flowery plants, and the two latter ornamental plants for the green-houſe, all of which have ſimple leaves, and compound radiated flowers.

Claſs and order, *Syngeneſia Polygamia Neceſſaria.*

*Characters.*] CALIX, a compound radiated flower, having a ſimple multipart general cup. COROLLA is compound, and conſiſts of numerous tubular hermaphrodite florets in the diſk, and many long flat females compoſe the rays. STAMINA, the hermaphrodites five ſhort filaments and cylindric antheræ. PISTILLUM, the hermaphrodites an oblong germen, ſlender ſtyle, and blunt bifid ſtigma; the females a trigonous germen, ſlender ſtyle, and reflexed ſtigma. PERICARPIUM none. SEMEN, a ſingle, oblong, incurved ſeed, in the female florets.

The ſpecies of note are as follow: the three firſt

firſt ſpecies and varieties are hardy annuals of the full ground.

[1]CALENDULA *Officinalis.*

*Officinal, or Common Garden Marigold*] Calendula with a ſhort ſtalk, dividing low into many buſhy branches a foot or two high, cloſely garniſhed with oblong oval leaves, and numerous radiated golden flowers at the ends of the branches, ſucceeded by boat-ſhaped, incurved, rough ſeeds.

*Varieties of this are*] Common Marigold with ſingle yellow flowers——with double yellow flowers,——Giant Common Marigold with very double flowers—with ſingle lemon-coloured flowers——double lemon-coloured flowers—with ſingle and double gold coloured flowers——with party-coloured flowers——with reflexed flowers——with proliferous or childing flowers, having many ſmall flowers iſſuing from the calix of the main one all around; of which there are, the Small Proliferous Marigold—Great Proliferous Marigold.

All theſe varieties are hardy annuals, riſing from ſeed in the full ground in ſpring, commonly flower in May or June, continuing a plentiful ſucceſſion until November, ſucceeded by abundance of ſeed, which, if gathered with care from the beſt of each reſpective ſort, may all be continued in diſtinct perfection; this ſhould be particularly obſerved in the Giant and other fine double and Poliferous kinds.

[2]CALENDULA *Pluvialis.*

*Cape Leafy-ſtalked Violet and White Calendula.*] Calendula with ſlender, very leafy, declining ſtalks, ſix or eight inches long; ſpear-ſhaped, ſinuated-indented leaves; and flowers from the ends of the branches, having the rays violet-coloured without, and white within, and purple bottoms.

[3]CALENDULA *Nudicaulis.*

Naked-ſtalked Violet and White Æthiopian Low Calendula.

The two following are green-houſe perennials.

[4]CALENDULA *Graminifolia.*

*Graſs-leafed Low Perennial Cape Calendula*] Calendula with ſeveral tufted heads near the root, covered with long, narrow, graſſy leaves, and amongſt them naked ſtalks eight or nine inches long, each crowned by one large radiated flower, having the rays purple without, white within, and purple bottoms, appearing from April till autumn.

[5]CALENDULA *Fruticoſa.*

*Shrubby Cape Calendula.*] Calendula with ſhrubby ſlender ſtalks and branches, growing ſix or ſeven feet high, garniſhed with oval leaves, and the branches terminated by radiated flowers, having the radius purple without, white within, and purple middles, appearing ſeveral months in ſummer.

The flowers of all the ſorts being compound and radiated, they, in their ſingle ſtate diſplay a naked diſc, or middle, compoſed of numerous, very ſmall, tubular florets; one or two ſeries of flat ſpreading ones form the radius, ray, or border; but in the full double flowers, the plenitude conſiſts of numerous flat florets, continued in many ſeries from the circumference to the very centre, forming a large full flower.

The firſt ſort, *Calendula Officinalis*, in its common ſingle-flowered ſtate, is regarded only as a pot-herb, and its flowers are the only parts uſed; but ſome of the full double varieties and proliferous kinds demand attention alſo as ornamental plants for the beauty of their flowers, which will effect an agreeable diverſity in the common compartments of the pleaſure ground, in aſſemblage with other hardy annuals.

Likewiſe the ſecond and third ſorts, being hardy annuals, will flower abundantly, and form a good variety in the open borders in June, July, and Auguſt.

The fourth and fifth ſorts, Graſs-leaved and Shrubby Calendula, producing many flowers in long ſucceſſion, are alſo worthy of a place in our gardens; but being impatient of froſt, muſt be kept in pots, to have ſhelter of a green-houſe or frame in winter.

*Propagation of all the Sorts.*

All the annual ſorts are propagated by ſowing the ſeeds in beds or borders in March or April, either in the places where they are to remain, or for tranſplanting.

When intended to cultivate the firſt ſort for culinary uſes, may either ſow the ſeeds where the plants are to remain, by broadcaſt on the ſurface, and rake them in, or ſow them in ſmall ſhallow drills a foot aſunder, covering them half an inch deep, and when the plants in either method have leaves an inch broad, hoe them out to twelve inches diſtance; or they may be ſown thick for tranſplantation, and when the plants have four or five leaves, plant them out in rows the above diſtance.

Their flowers being the uſeful parts, they will be fit for uſe in conſtant ſucceſſion from time

time to time in dry weather, and, after drying them in the ſhade, ſhould be put up in paper bags for uſe.

To propagate the annual kinds in general as flowering plants, ſow them either in patches in the borders, &c. where they are to remain, ſowing four or five ſeeds in each patch half an inch deep, but leave only one of the beſt of the plants in a place; or the plants may be raiſed in a bed or border, and when they have four or five leaves, tranſplant them in the order juſt directed.

They will flower and ripen ſeeds abundantly from June to the end of October.

The fourth ſort is propagated by ſlipping the heads any time from March till September, planting them in pots, which, if plunged in a hot-bed, or in the common earth, and cloſe covered with a hand-glaſs, and occaſionally ſhaded and watered, they will readily grow, hardening them gradually to the air.

The ſhrubby ſort is propagated by cuttings of its branches, in pots of light earth, in April, May, or June, plunging them in a moderate hot bed, or, in default thereof, plunge them to the rims in the common ground, giving ſhade and water.

CALIX, the empalement or flower-cup, which is the green outer part of a flower, that immediately incloſes and ſupports the bottom of the corolla or petals. See COROLLA.

According to modern botaniſts there are ſeven ſpecies of Calix, viz.

[1]*Perianthium*, which is conſiderably the moſt common ſpecies, and is that ſort of Calix which cloſely ſurrounds the flower. When we ſpeak therefore of the proportion, figure, or ſingularity of the Calix, we would be underſtood to mean that ſpecies of Calix called Perianthium. See PERIANTHIUM. The other ſpecies, which differ remarkably both in appearance and ſtructure from this, are always denominated by their own proper names to avoid confuſion, and which are termed

[2]*Involucrum* is a Calix at a diſtance from the flower, and belong principally to the umbelliferous plants. See INVOLUCRUM.

[3]*Amentum*, or Katkin, is compoſed of a multitude of ſcales, faſtened to an axis or thread. See AMENTUM.

[4]*Spatha*, a ſheath, which burſts lengthways, and protrudes one or more flowers, as in the Narciſſus, &c. See SPATHA.

[5]*Gluma*, the huſky Calix of the graſſes. See GLUMA.

[6]*Calyptra*, the Calix of the moſſes, is membraneous, very thin, and ſhaped like an extinguiſher, and is placed over the antheræ. See CALYPTRA.

[7]*Volva*, the Calix of the *fungi*, or muſhroom tribe is membraneous, and torn on the ſides. See VOLVA.

The uſe of the Calix is to incloſe, ſecure, and ſupport the other parts of the flower; to be their ſecurity before its opening, by intercepting all extremities of weather, and afterwards to be their ſupport, by containing all the parts in their due and moſt graceful poſture. Hence we have the reaſon why the Calix is frequently various, and ſometimes wanting. Some flowers have none, as tulips, and many other liliaceous plants; becauſe having a fat, firm leaf or petal, and each leaf likewiſe ſtanding on a broad and firm baſis, they are thus ſufficient in themſelves. Carnations, on the contrary, have not only a Calix, but that for greater ſupport, it is long, and of one piece; for otherwiſe, the foot of the petals being very long and ſlender, moſt of them would break out of compaſs; in the ſame flower the top of the Calix is indented into five parts, that the indentments, by lapping over the petals before their expanſion, protects them; and afterwards the ſame parts, by ſpreading regularly under the Corolla when expanded, affords it ſupport. The Calix or cup in moſt plants is ſingle; in ſome genera of the mallow tribe, as *alcea*, the holyhock, and *Altheæ*, marſh-mallow, it is double, or of two ſeries.

With reſpect to the number of leaves or pieces of which the Calix is compoſed, is either of one leaf, *monophyllum*; or of two, *diphyllum*; of three, *triphyllum*; or four, *tetraphyllum*; of five *pentaphyllum*, &c. or many leaves, *polyphyllum*; and when one is leaf divided into two, three, four, five, or more parts, it is termed *monophyllum-bifidum*, *trifidum*, *tetrafidum*, *quinquefidum*, &c. which leaves and diviſions are either equal, as in moſt plants; or unequal, as in rock-roſe, &c. in which, two of the five leaves of which the Calix conſiſts, are alternately leſs than the other three.

With reſpect to proportion, the Calix is generally ſhorter than the corolla in moſt plants, though in ſome genera it is equal, and in ſome longer.

With reſpect to compoſition, the Calix ſometimes conſiſts of a number of leaves laid over each other like tiles or ſcales, *imbricatum*, as in hawk-weed, &c. ſometimes of ſcales that ſpread wide and are diffuſed, or diverge on all ſides *ſquarroſum*, as in the thiſtle.

As to duration, the Calix either falls off at the firſt opening of the flower, *Calix caducum*, as in the poppy. With the flower, *Calix deciduum*, as in the barberry and the croſs-ſhaped flowers; or continues till the maturity of the fruit. *Calix perſiſtens*, as in the lip and maſqued flowers, and ſeveral others.

Laſtly, a Calix is proper to one flower, as in moſt plants with ſimple flowers; or common to many, as in ſcabious and the compound flowers.

CALLA, *Æthiopian Arum*.

Of this genus is one beautiful, herbaceous, flowery perennial of the green-houſe, adorned with large radical leaves, and a two-foot ſtalk, crowned by ſpadiceous yellowiſh flowers.

Claſs and order, *Gynandria Polyandria*.

*Characters.*] CALIX, a monophyllous, oval, heart-ſhaped, coloured, permanent ſpatha, protruding a digitated, ſingle, erect club or ſpadix, covered with the fructifications. COROLLA, no petals. STAMINA, many very ſhort filaments, and ſmall yellow antheræ. PISTILLUM, a roundiſh germen, ſimple ſtyle, and acute ſtigma. PERICARPIUM, each germen becomes a globular, pulpy, unilocular berry, containing a few obtuſe ſeeds.

The ſpecies is,

CALLA *Æthiopica*.

*Æthiopian Arum, or Sweet Calla.*] Calla with a tuberous, thick, fleſhy, brown root, crowned by cluſters of large heart-ſhaped, arrow-pointed leaves, on very long foot-ſtalks; and amongſt them upright flower-ſtalks two feet high, terminated by a ſingle ſpatha, protruding a yellowiſh ſpadix, covered with whitiſh fructifications of a muſky fragrance, ſucceeded by roundiſh red berries.

It is furniſhed with leaves all the year, flowers in May, and the whole plant effects an agreeable ſingularity.

This ſpecies being an exotic of Africa, requires ſhelter here in winter, ſo muſt be continued in pots of light earth, to be moved to a green-houſe or garden-frame in that ſeaſon, but ſhould be placed in the full air from May till October.

It propagates exceedingly by off-ſets, which may be ſeparated in September, planted ſingly in ſmall pots, and they will flower the year following.

CALTHA, Marſh Marygold.

One ſpecies only belong to this genus, a low, herbaceous, flowery perennial of but ſix or eight inches ſtature, producing many ſhowy yellow flowers.

Claſs and order, *Polyandria Polygynia*.

*Characters.*] CALIX none. COROLLA, five large, ſpreading, concave petals. STAMINA, numerous filaments, and obtuſe erect antheræ. PISTILLUM, ſeveral oblong compreſſed germina, no ſtyles, but ſimple ſtigmas. PERICARPIUM, ſeveral ſhort acuminate capſules, containing many roundiſh ſeeds.

The ſpecies is,

CALTHA *Paluſtrus*.

*Marſh Marygold.*] Caltha with fibrous perennial roots, crowned by many round crenated leaves on ſhort foot-ſtalks, and amongſt them ſeveral branching flower ſtalks ſix or eight inches high, ſurmounted by large bright-yellow flowers, in April, May, and June.

*Varieties.*] Common Single-flowered Marſh Marygold—Double Marſh Marygold.

The ſingle kinds have but five petals, but the doubles are multiplied to the very centre, forming a large, fair, full flower.

This ſpecies, in its ſingle ſtate, ornaments our moiſt meadows contiguous to brooks, rivers, or other waters, in many parts in great abundance, among which the double was found, and which merits a place among our hardy flowering perennials in the embelliſhment of ſhady borders, though it will proſper in any ſituation.

Its propagation is eaſily and abundantly effected by ſlipping or parting the roots in autumn, and each ſlip will flower the following year.

CALLICARPA, *Callicarpa*.

This is a hardy deciduous ſhrub of four or five feet ſtature, dividing low into numerous branches, garniſhed with roundiſh, acute, ſomewhat hoary leaves, and numerous ſmall, reddiſh, monopetalous, four-parted flowers in whirls, having numerous ſtamina and ſtyles.

It is proper for the ſhrubbery, and is propagated by ſeeds, layers, and cuttings.

CALYCANTHUS, Carolinian All-Spice tree.

This genus furniſhes a hardy, deciduous, aromatic ſhrub, for the ſhrubbery plantations.

Claſs and order, *Icoſandria Polygynia*.

*Characters.*] CALIX is monophyllous, cut into many ſpear-ſhaped coloured folioles. COROLLA none; the calicinal folioles ſupply the place of petals. STAMINA, many filaments, and oblong ſulcated antheræ. PISTILLUM, numerous germina, and naked ſtigmas. PERICARPIUM none; the calix thickens to an oval fruit, containing many ſeeds.

The ſpecies is,

CALYCANTHUS *Floridus*.] Calycanthus with a ſhrubby brown ſtem, branching four or

or five feet high, having an aromatic bark; large oval, pointed leaves, by pairs oppoſite; and dull-purple ſtarry flowers, placed ſingly towards the ends of the branches, having the inner petals the longeſt.

In America it has the appellation of All-ſpice, from the aromatic ſpicy odour of its bark.

This ſhrub ſhould have a warm ſituation and dry ſoil, in the fronts of the principal ſhrubbery compartments. And its propagation is by layers of the young branches, or one year's ſhoots, which in one year will be rooted fit for tranſplantation.

CALYCULA, the Calix of a floret in an aggregate flower.

CALYCULATUS *Calix*, an augmented Calix, or a flower-cup furniſhed with a leſſer flower cup, or ſmall leaves placed cloſe to the baſe of the cup, or to the flower.

CALYPTRA, the Calix of the moſſes. See CALIX.

CAMPANIFORMES *Plantæ*, plants that produce Campanulate, or bell-ſhaped flowers, ſuch as the *campanula* or bell-flower, *trachelium* or throat-wort, *convolvulus*, *lobelia* or cardinal's flowers, *aſclepias*, *atropa*, *bryonia*, *tamus*, *apocynum*, *hibiſcus*, or *altheæ frutex*, &c.

CAMPANULA, Bell-flower.

This genus furniſhes a beautiful collection of herbaceous annual, biennial, and perennial flower-plants; the perennials are much the moſt numerous, and grow from about two to ſeven feet high, garniſhed with ſimple leaves, and numerous monopetalous, very conſpicuous, bell-ſhaped, blue, purple, and white flowers.

Claſs and order, *Pentandria Monogynia*.

*Characters.*] CALIX, a monophyllous, five-parted cup placed on the germen. COROLLA, a ſingle bell-ſhaped petal, five-parted at top, and in the bottom, a five-parted Nectarium. STAMINA, five ſhort filaments inſerted into the top of the valves of the Nectarium, and oblong compreſſed antheræ. PISTILLUM, an angular germen below the receptacle, ſlender ſtyle, and tripartite ſtigma. PERICARPIUM, a roundiſh, angular capſule of three or five cells, and the ſame number of holes for the diſperſion of the ſeeds.

The ſpecies of moſt note are: the firſt four are hardy perennials.

[1]CAMPANULA *Pyramidalis.*

*Pyramidal, or Steeple Bell-flower.*] Campanula, with large, tuberous, milky roots, upright, ſtrong, ſmooth ſtalks, a yard or more high, garniſhed with oblong oval, a little ſerrated, ſmooth leaves, decreaſing in ſize upward, and numerous, large, bell-ſhaped flowers, forming a pyramid from the middle to the top of the ſtalk.

*Varieties.*] Pyramidal blue flowered Campanula——with white flowers——with double flowers.

[2]CAMPANULA *Perſicæfolia.*

*Peach-leaved Campanula.*] Campanula with very fibrey roots, crowned by numerous oboval leaves; many upright, angular ſtalks, two feet and a half high, garniſhed with long, narrow, ſtiff, cloſe-ſitting leaves, and towards the top many large, bell-ſhaped, expanded flowers in June and July.

*Varieties of this are*] Peach-leaved, ſingle, blue flowered Campanula——with double blue flowers——with ſingle white flowers——double white flowers.

[3]CAMPANULA *Trachelium.*

*Great Throat-wort, or Nettle-leaved Campanula.*] Campanula with fibrey roots, upright, angular, hairy ſtalks, two or three feet high, emitting ſhort ſide-branches, ornamented with oval, oblong, deeply ſawed, foot-ſtalked, hairy leaves; and towards the top, trifid foot-ſtalks ſupporting ſpreading bell-ſhaped flowers having hairy cups, appearing in June.

*Varieties of this are*] Great Throat-wort with ſingle blue flowers—double blue flowers—ſingle white flowers——double white flowers—ſingle and double pale purple flowers.

[4]CAMPANULA *Latifolia.*

*Great Broad-leaved Campanula, or Giant Throat-wort.*] Campanula with thick, fleſhy, milky roots, upright, ſtrong, round, taper, unbranching ſtalks, ſix or ſeven feet high, garniſhed with broad, oval-ſpear-ſhaped, ſerrated, alternate leaves, and the upper part with bell-ſhaped, deeply cut, ſpreading flowers growing ſingly on ſhort foot-ſtalks.

*Varieties.*] Great broad-leaved Campanula with ſingle blue flowers—double blue flowers—ſingle and double white flowers—ſingle and double pale-red flowers—with ſtriped flowers.

The following is a hardy biennial:

[5]CAMPANULA *Medium.*

*Middle, or Biennial Campanula, commonly called Canterbury Bells.*] Campanula with thick fibrey roots, crowned by many oblong, rough, hairy leaves; an upright, robuſt, furrowed, pyramidally branching ſtalk, two feet high, garniſhed with long, narrow, ſawed, hairy leaves, placed alternate, and numerous large bell-ſhaped, ventricoſe flowers, on long foot-ſtalks, ariſing pyramidally almoſt the whole length of the ſtalk, appearing in June and July, ſucceeded by quinquelocular capſules.

*Varieties.*] Canterbury Bell-flower with blue flowers—purple flowers—white flowers——with ſtriped flowers——with double flowers: the two latter of which are rare.

The two following are hardy annuals.

[6]CAMPANULA *Speculum.*

*Venus Looking-glaſs.*] Campanula with a very branching, diffuſed, angular ſtalk, about a foot high, ornamented with oval, oblong, cloſe-ſitting leaves, and all the numerous branches terminated each by one ſmall, bell-ſhaped, five-parted flower, in long ſolitary cups, ſucceeded by priſmatic capſules, flowering moſt part of ſummer and autumn.

*Varieties.*] Venus Looking-Glaſs with bright blue flowers—with white flowers—pale purple flowers.

[7]CAMPANULA *Hybrida.*

*Leſſer Venus Looking-glaſs.*] Campanula with a low ſtalk, eight or ten inches high, branching from the bottom, garniſhed with oblong, crenated, cloſe-ſitting leaves, and all the branches terminated by ſmall, bell-ſhaped, five-parted flowers, in aggregate cups, ſucceeded by priſmatic capſules, flowering in June and July.

The two following are green-houſe perennials.

[8]CAMPANULA *Canarienſis.*

*Canary Bell-flower.*] Campanula with thick, fleſhy, milky, penetrating roots; upright round ſtalks ſeven feet high, ſending out many ſide branches, garniſhed with ſpear-ſhaped, indented foot-ſtalked leaves, placed oppoſite, and from the joints large, perfectly bell-ſhaped, flame-coloured, reddiſh, ſtriped flowers, hanging downward, ſucceeded by quinquelocular capſules; flowering in September and October, often continuing till ſpring.

[9]CAMPANULA *Americana.*

*American Bell-flower.*] Campanula with a thick fleſhy root, crowned by a cluſtered head of oblong, crenated, rigid leaves, an upright branching ſtalk a foot and a half high, adorned with heart and ſpear-ſhaped membraneous-bordered leaves, having ciliated foot-ſtalks; and from the axillas many long pedunculi, each terminated by a large, bell-ſhaped, five-parted, ſpreading flower, in July and Auguſt.

*Varieties.*] American Bell flower with ſingle white flowers——ſingle blue—double blue.

The flowers of all the ſpecies and reſpective varieties conſiſt of only one large bell-ſhaped petal, which in different ſpecies is more or leſs five-parted and ſpreading, and which in moſt of the ſorts is ſucceeded by plenty of ſeeds in our gardens.

The firſt four ſpecies are hardy, very beautiful, flowery perennials; they are perennial only in root, which is of many years duration, crowned with numerous leaves, and amongſt them riſe the flower-ſtalks annually in ſpring, flowering chiefly in June, July, and Auguſt, ſucceeeded by abundance of ſeed, and ſoon after die down to the root; they producing numerous flowers in long ſucceſſion, renders them choice furniture for the pleaſure-ground, and grow freely in the common borders, or other compartments, in any expoſure. The firſt ſort, however, being ſomewhat impatient of wet and very ſevere froſt, ſhould have a dry ſoil and ſheltered ſituation; and ſome ſhould alſo be placed in pots, to be moved to occaſional ſhelter in ſevere weather; and in ſummer, when in flower, they may be moved in their pots to adorn any particular part, for they are very flowery and ornamental; and if their ſtalks are trained to ſticks, fan-faſhion, they will appear to conſiderable advantage, and in which order they are often placed to adorn halls and other apartments in ſummer, placing them in the chimnies, where they will continue a long time ornamental.

The fifth ſort *(Campanula Medium)* and varieties are moſt elegant biennials, and fine furniture for any part of the pleaſure-ground; but as being biennials, never flower but once, they riſing from ſeed one year, the next they ſhoot up ſtalks, flowers, and perfect ſeeds, and ſoon after totally periſh; ſo that a ſupply muſt be annually raiſed from ſeed.

The two annual ſorts are proper furniture to adorn the fronts of borders, on the ſides of ſpacious walks, in patches, among other hardy annuals. See ANNUAL PLANTS.

The two green-houſe ſorts are plants of ſuperior beauty when they flower, particularly the *Campanula Canarienſis.* The roots of both are durable, but the leaves and ſtalks are renewed annually, and flower freely, but rarely afford us ſeeds in England: they muſt be kept in pots of light earth, and moved to the ſhelter of a green-houſe or garden-frame in winter.

### *Propagation of all the Sorts.*

The firſt four ſpecies and varieties are propagated plentifully by ſlipping or parting their roots in September, October, or early in ſpring. They may be alſo raiſed abundantly by ſeed, in a bed or border of common earth in March, ſowing it on the ſurface, and rake it in; and the plants ſhould be pricked out in July,

July, which in October or November tranſplant into the borders, where they will flower the following ſummer. But as there ſeldom riſe any but ſingle flowers from ſeeds, the double kinds therefore are increaſed with certainty no other way than by dividing the roots, every off-ſet or ſlip of which having fibres will readily grow; but it is not proper to part them too ſmall, unleſs when intended to have as great an increaſe as poſſible, in which caſe the ſmall ſlips ſhould be planted in nurſery-beds a year to get ſtrength; but the large ſlips may be planted at once, where they are to remain to flower.

But it is proper to obſerve of the firſt ſort (*Pyramidal Campanula*), that the roots do not multiply ſo faſt as the others, nor are they of ſo long duration; it is therefore neceſſary to raiſe a ſupply of them often from ſeed, and ſeedling-plants generally flower ſtrongeſt. Let ſeeds therefore be ſown in autumn, or early in ſpring, in large pots, boxes, or tubs of light rich compoſt, covering the ſeed half an inch deep, and place them in a frame to have occaſional ſhelter of glaſſes in very cold, wet, or ſevere froſty weather, but fully expoſe them in mild days. By this care the plants will appear in April or May, and by September will be of due ſize to tranſplant, doing it when their leaves decay, planting them in a high-lying bed or border of light earth, at ſix inches diſtance, with their crowns half an inch deep. Here let them remain two years, giving occaſional ſhelter in winter, and weeding and water in ſummer; then in autumn finally tranſplant them, ſome into pots, others cloſe under a warm wall, and ſome diſperſe in open dry borders among other perennials.

The fifth ſort (Canterbury-bell) and varieties, being biennials, can only be raiſed from ſeed, ſown annually in March, April, or May: ſow it in a bed or border of good earth by broad-caſt, and rake it in, and the plants will be fit to prick out in June or July, planting them ſix inches apart, to remain till autumn or ſpring following; then tranſplant them, with little balls of earth to their roots, in the places where they are to flower.

The two annual ſorts are alſo raiſed from ſeed, ſowing it a quarter of an inch deep, in ſmall patches, in different parts of the borders, in the place where they are to flower, permitting ſeveral plants to remain in each patch.

The Canary Campanula is propagated by off-ſets of the roots in July, when the ſtalks decay; theſe being ſucculent milky roots, it is neceſſary, when you ſlip them, that the ſlips lie ſeveral days in the dry, to heal over the wounded parts; then plant them ſingly in pots of light ſandy earth, place them in the ſhade, and moiſten the earth occaſionally in dry weather.

The American ſort is alſo propagated by off-ſets from the roots of the old plants in September.

CANNA, Indian flowering Reed, or Indian Shot, ſo called from the figure of their black ſeeds.

The plants are herbaceous perennials of America, preſerved here in hot-houſes for the beauty of their monopetalous flowers, produced in ſpikes upon ſtalks, from about a yard to ſix or ſeven feet high.

Claſs and order, *Monandria Monogynia.*

*Characters.*] CALIX, a three-leaved coloured abiding cup. COROLLA, one petal cut into ſix ſpear-ſhaped ſegments, and a two-parted nectarium. STAMINA, no filaments, but a linear antheræ, attached to one ſegment of the nectarium. PISTILLUM, a roundiſh germen under the Calix, a flat ſtyle, and linear ſtigma. PERICARPIUM a roundiſh, three-furrowed, trilocular capſule, containing globular ſeeds.

The ſpecies are,

[1] CANNA *Indica.*

*Common Indian Flowering Reed.*] Canna with a tuberous, thick, fleſhy root, crowned by many large, oval, ribbed leaves, a foot long, almoſt half as broad, pointed at both ends, and an upright herbaceous ſtalk four feet high, terminated by looſe ſpikes of flowers, of different colours in different varieties.

*Varieties are*] Common Indian Flowering Reed with ſcarlet flowers—red flowering—yellow flowering—and with ſpotted flowers.

[2] CANNA *Glauca.*

*Glaucous, or Sea-green-leaved Canna.*] Canna with tuberous, knotty, fleſhy roots, upright ſtalks ſeven feet high, leaves a foot and a half long, and the ſtalk terminated by thick ſpikes of large, pale, yellow flowers.

Theſe plants make a good appearance when in flower, which in England is in June, July, and Auguſt, ſucceeded by ſeeds in autumn. The plants muſt always be kept in pots of rich earth, to be moved to ſhelter in winter.

They are propagated by ſeeds in a hot-bed in ſpring; and in ſummer, when the plants are a little advanced in growth, prick them ſeparately in ſmall pots of rich earth, plunging them alſo in the hot-bed, giving ſhade, water, and freſh air, to which harden them by;

by degrees till they bear it fully till October, then place them in a ſtove or very good green-houſe.

CANNABIS, the Hemp Plant.

There is but one ſpecies, an herbaceous, tall, ſtrong annual, valuable for the bark of its ſtalk for making hemp for cordage and coarſe cloth, and for its ſeed for oil, &c.

Claſs and order, *Dioecia Pentandria.*

*Characters.*] CALIX, male and female flowers on different plants, the males having a five-parted cup; that of the females is monophyllous, oblong, pointed, and permanent. COROLLA, no petals. STAMINA, the males have five filaments, and ſquare antheræ. PISTILLUM, a ſmall germen, two long ſtyles, and acute ſtigmas. PERICARPIUM, it is very ſmall, and the ſeed is lodged in the calix.

The ſpecies is,

CANNABIS *Sativa.*

*Manured Hemp.*] Cannabis with upright, ſtrong, branchy ſtalks, ſix or ſeven feet high, adorned with large finely-digitated leaves, of about ſeven long narrow lobes.

*Varieties.*] Manured Hemp with male flowers——with female flowers, or female hemp.

Both the varieties are alike uſeful, as hemp for cordage, &c. but it is the female ſort only, that produce the ſeed, for oil and other uſes.

A few of theſe plants may be admitted as annuals in the pleaſure-ground, for the variety of their majeſtic growth and numerous fingered leaves, ſowing the ſeed in April where the plants are deſigned to remain.

In the huſbandry culture of this plant, it delights in a moiſt, rich, deep ſoil, prepared for the ſeed, by ploughing and harrowing; and April is the time for ſowing, allowing two buſhels to an acre, ſowing it by broadcaſt and harrow it in; and when the plants are come, hoe them to a foot diſtance, and they will be fit to pull for uſe in autumn.

It is pulled at two different times, the male plants generally about the middle of Auguſt, or when they have ſhed their farina to fecundate the females, ſoon after which they begin to decay, and ſhould be pulled; but the females muſt ſtand till October to ripen their ſeed. Both ſorts, when pulled, are bound in bundles a yard in compaſs, and after drying a few days, are ſtacked up or houſed for uſe.

CAPITULUM, a little roundiſh head of flowers, a mode of infloreſcence, or way of flowering, in which many ſmall flowers or florets are collected into a cloſe roundiſh head or knob, appearing as one flower, as in *gomphrena*, or globe amaranthus; and *cephalanthus*, or button-tree.

A *Capitulum* is either,

*Globoſum*, round or globular, as in *gomphrena globoſa*; *dimidiatum*, half globular or hemiſpherical; *ſubrotundum*, roundiſh; *ovatum*, egg-ſhaped; *pyramidatum*, pyramidal ſhaped; *pedunculatum*, the florets having little foot-ſtalks; *folioſum*, leafy, or intermixed with leaves; *nudum*, naked, having no leaves; *hiſpidum*, hiſpid, briſtly.

CAPPARIS, the Caper Shrub.

There are ſeveral ſpecies, moſtly of ſhrubby growth; one of which is cultivated in many of our gardens as a green-houſe plant, and which is the true Caper-Shrub, a native of Italy, the flower-buds of which pickled, are the Capers uſed in ſauces, &c.

Claſs and order, *Polyandria Monogynia.*

*Characters.*] CALIX, the cup is cut into four concave gibbous parts. COROLLA, four large, obtuſe, ſpreading petals. STAMINA, numerous filaments, and verſatile antheræ. PISTILLUM, a pedicillated germen, no ſtyle, but an obtuſe ſeſſile ſtigma. PERICARPIUM, a fleſhy, pedicillated, unilocular berry, and numerous ſeeds.

The true Caper is,

CAPPARIS *Spinoſus.*

*Spinous Capparis, or True Caper-Shrub.*] Capparis with ſhrubby ſpinous ſtalks and branches, forming a buſhy head, growing three or four feet high, garniſhed with roundiſh, ſmooth, entire leaves, placed alternate; and from the ſides of the branches many ſingle foot-ſtalks, each ſuſtaining one large, expanded, white flower.

The flower-buds, before the petals begin to expand, are proper for Capers; but for which uſe theſe are not to be expected in due quantity in this country.

This plant muſt be kept in pots of light ſandy earth, to be placed in a green-houſe in winter; but it is generally more prolific in flowers, when in a hot-houſe during that ſeaſon.

It is propagated by ſeed from abroad; and by layers of its youngeſt branches: ſow the ſeeds in pots of light ſandy compoſt in ſpring, and plunge them in a hot-bed. By layers, the young branches may be layed in ſpring or ſummer, giving each a ſmall ſlit, and they will probably be rooted in a year, though they are often two before it is effected.

CAPSICUM, *Capſicum*, or Guinea Pepper.

This genus furniſhes ornamental and uſeful plants, conſiſting of herbaceous tender annuals, and ſhrubby hot-houſe perennials, all of upright growth, with branchy heads, from two to five feet high, garniſhed with ſimple leaves, and ſmall wheel-ſhaped, five-parted, white flowers, ſucceeded by elegant ſcarlet, or yellow fruit; in which conſiſts the principal merit of the plants, being beautiful when growing, and are an excellent pickle, of a hot ſpicy nature.

Claſs and order, *Pentandria Monogynia.*

*Characters* ] CALIX, a monophyllous cup, divided into five erect permanent ſegments. COROLLA, a ſmall wheel-ſhaped acutely five-parted patent petal. STAMINA, five filaments, and connivent antheræ. PISTILLUM, an oval germen, ſlender ſtyle, and obtuſe ſtigma. PERICARPIUM, the germen ſucceeds to a baccaceous, hollow, bilocular fruit, of uncertain figure, furniſhed with numerous compreſſed ſeeds.

Modern botaniſts allow but two real ſpecies of this genus, an herbaceous annual, and a ſhrubby perennial; but both of which vary wonderfully into numerous varieties, in regard to the ſhape, ſize, and poſition of growth of the fruit.

The ſpecies are,

[1]CAPSICUM *Annua.*

*Annual Herbaceous Capſicum.*] Capſicum with an upright herbaceous ſtalk, dividing into a branchy head, about two feet high, garniſhed with long, broad, entire leaves; and from the ſides of the branches numerous ſmall, wheel-ſhaped, quinquefid, white flowers, ſucceeded by beautiful ſcarlet or yellow pods, of an indeterminate figure and ſize, from half an inch to half a foot long.

The varieties of this, in reſpect to the ſhape, ſize, and poſition of growth of the fruit, are very numerous, which may be divided into ſix claſſes, as thoſe of each claſs are pretty permanent.

Varieties are,

*Long-podded Annual Capſicum.*] Capſicum with oblong, pendulous or hanging, ſcarlet pods——with oblong, pendulous, yellow pods——with upright, oblong, ſcarlet pods——with ſhort upright pods——with divided pods——with very taper pods a ſpan long.—All of which varieties often riſe from the ſame ſeed of the Common Long-podded, Red, or Yellow Capſicum, rarely altering from one to the other in colour, only in the ſize and poſition of growth.

*Heart-ſhaped Capſicum.*] Capſicum with roundiſh, heart-ſhaped, hanging pods——with oblong, heart-ſhaped, hanging pods——with heart-ſhaped upright pods—with round, heart-ſhaped, upright pods——with very large roundiſh upright pods, of each of which there are red and yellow colours.

*Angular heart-formed Capſicum.*] Capſicum with upright, angular, heart-ſhaped, furrowed and wrinkled ſcarlet pods——with upright, angular, heart-ſhaped, flat-topped, ſcarlet pods——with upright, angular, bell-ſhaped, ſcarlet pods; and the plants have generally broad wrinkled leaves.

*Great Angular Pickling Capſicum, or Bell Pepper.*] Capſicum with upright, ſwelling, fleſhy-ſkinned, wrinkled red pods, flatted and angular at top——with hanging or pendulous pods; the pods of theſe varieties having a thicker, more fleſhy, and tender ſkin, are the beſt of all for pickling.

*Cherry-fruited Capſicum.*] Capſicum with low ſpreading branches, leaves in cluſters, and round, ſmooth, red, cherry ſhaped fruit.

*Olive-ſhaped Capſicum.*] Capſicum with an erect branchy head, and olive-ſhaped fruit.

Each of the above claſſes of varieties, though allowed to be only varieties of one common parent, yet by care in ſaving the ſeeds of the plants of each claſs, they continue pretty diſtinct or permanent, and ſeeds of either generally produce the like kinds, as expreſſed under each head.

All the varieties flower in June and July, and the pods and ſeeds ripen in Auguſt, September, and October.

The following are the ſhrubby perennial ſpecies and varieties.

[2]CAPSICUM *Fruteſcens.*

*Shrubby Perennial Capſicum.*] Capſicum with a ſhrubby perennial ſtem, divided into a branchy, buſhy head, four or five feet high, garniſhed ſome with long narrow, and others with broad, and with purple veined leaves, and ſmall wheel-ſhaped, five-parted, white flowers, ſucceeded by many very ſmall fruit of different figures in different varieties.

*Varieties of this are*] Shrubby perennial Capſicum, with pyramidal yellow fruit——Shrubby, pyramidal, red, barberry-fruited Capſicum, or barberry pepper—Shrubby, conical red-fruited Capſicum, or hen pepper—Shrubby, conical, golden-fruited Capſicum ——Shrubby, oval, very ſmall, red-fruited Capſicum, or bird pepper: all theſe, though ſuppoſed only varieties of the ſame ſpecies, are pretty permanent from ſeed, i. e. the ſeed

of any particular variety, if ſaved with care, generally produce plants and fruit of the ſame kind.

All theſe plants, both annual and ſhrubby kinds, being natives of both Indies, are conſequently of tender quality here. The annuals require to be raiſed and forwarded in hot-beds, raiſing them from ſeed in March or April, and continuing them under occaſional ſhelter until the end of May, or beginning of June. And the ſhrubby kinds require almoſt the conſtant temperature of a ſtove, or, at leaſt, although they will ſucceed in a moderate hot-bed under a deep frame in ſummer, where they can have occaſional ſhelter of glaſſes in nights and bad weather: they muſt be placed in a ſtove in autumn, to remain all winter.

The annual kinds in general, conſidered as plants of ornament, are of a regular branchy growth, and very flowery; but their greateſt merit is in the beauty of their fruit, which being numerous, and of different forms, ſizes, poſitions of growths, and colours, intermixed with the green leaves and white flowers, make a fine appearance the latter part of ſummer, either in the borders, &c. or in pots to adorn courts or other compartments.

And for uſeful purpoſes, the young or half-grown fruit is eſteemed the fineſt pickle in the world; all the ſorts may be uſed for this purpoſe, but the great angular-podded kind claims preference.

The ſhrubby ſorts make a fine appearance in autumn and winter in the ſtove, with their ripe fruit, and which often continues on the plants till ſpring.

The pods of all the ſorts are very hot and ſpicy: the inhabitants of America uſe them in all their ſauces, and the negroes devour them greedily; whence the plants have the appellation of Negro, or Guinea Pepper.

The ripe ſeed of all the ſorts is inſupportably acrid, as many have experienced by ignorantly chewing it, or by waggiſh perſons rubbing it, for diverſion, on the edges of drinking cups, &c. And the ripe pods thrown in the fire, occaſion vehement ſneezing, coughing, and frequently vomiting.

*Propagation of all the Sorts.*

All the ſorts are eaſily raiſed from ſeed, in a hot-bed, in March or beginning of April. But firſt of the annual ſorts.

A hot bed is to be prepared at the above time, which will ſerve for theſe and many other tender annuals, place a frame and glaſs thereon, and then lay in five or ſix inches depth of rich light earth; the ſeed may then either be ſown on the ſurface, or in ſmall drills, or in pots, plunging them in the mould, obſerving in either method to cover it about a quarter of an inch deep: the plants will ſoon appear, obſerving to give air daily in common with other plants of the bed, by tilting up the light. See ANNUAL PLANTS. Alſo give frequent very moderate waterings; and when they are two or three inches high, having three or four leaves, it will be of much advantage to prick a quantity of them out upon another hot-bed, at four inches diſtance, giving water, and ſhade them occaſionally from the ſun, till rooted; after which admit air freely every favourable day, and moderate waterings two or three times a week; and by the middle of May harden them gradually to the full air, into which they ſhould be tranſplanted the beginning of June, removing them with a ball of earth to each root, and place ſome in different parts of the flower-borders, and ſome in pots, giving due waterings in dry weather, till they have taken good root.

But thoſe you intend for pickling, ſhould be planted out in a rich warm border, in the kitchen-garden, in rows a foot and a half or two feet diſtance, and about fifteen inches diſtant in the line, giving water as above directed.

The ſhrubby ſorts are alſo raiſed from ſeeds, as directed for the annuals, and the plants ſhould be pricked ſingly in ſmall pots, and plunged upon another hot-bed, under frames and glaſſes, giving air and water as before obſerved; and when they are conſiderably advanced in growth, remove them, with the balls to their roots, into larger pots, plunging them alſo in a moderate warmth under a deep frame, where they may remain to have occaſional ſhelter of the glaſſes till autumn; then remove them in their pots to the ſtove, where their fruit will form a fine variety all winter.

**CAPSULA**, Capſule, one of the eight ſpecies of pericarpium, or ſeed-veſſel.

This ſpecies of ſeed-veſſel, *Capſula*, is a dry hollow pericarpium, of one or more elaſtic valves, which opens or ſplits, in ſome determinate manner, for diſcharging the ſeeds when ripe, and differs eſſentially from the other ſeven ſpecies of ſeed-veſſel. See PERICARPIUM, &c.

A Capſule conſiſts of one or more cells, *Locu-*

[*Loculamenta*] when of two or more, they are divided from each other by partitions, having a *Columnella*, or little column of membraneous ſubſtance, paſſing through it, to connect the ſeveral partitions with the ſeed. When the Capſule conſiſts of a ſingle cell only, it is botanically termed *unilocular*; if of two, *Bilocular*; if three, *trilocular*; if four, *quadrilocular*; if five, *quinquelocular*; if ſix, *ſexlocular*; and if many, *multilocular*.

When it is compoſed of two valves, or parts that open, it is termed *bivalve*; when of three, *trivalve*; when of four, *quadrivalve*; and of five, *quinquevalve*, &c. See VALVULA.

When of different figures, they are termed *trigona*, when three-cornered; *tetragona*, four-cornered; *pentagona*, five-cornered; *turbinata*, top-ſhaped; *inflata*, ſwoln or puffed out; *ventricoſa*, big-bellied; *flaccida*, feeble, flaccid; *globoſa*, round, globular; *ovata*, egg-ſhaped; *cordata*, heart-ſhaped; *obcordata*, heart-ſhaped, with its tip downwards; *columnaris*, column-ſhaped; *acuminata*, pointed, tapering to a point; *teres*, ſlender and cylindrical; *conica*, conic-formed; *bicornis*, two-horned; *tricornis*, three-horned; *lunalata*, creſcent-ſhaped; *compreſſa*, flat, preſſed together; *lanceolata*, lance-ſhaped; *ſubrotunda*, roundiſh; *oblonga*, oblong, longer than broad; *bicarinata*, two-keeled; *tricarinata*, three-keeled; *alata*, winged; *ſucculenta*, ſucculent, pulpy; *carnoſa*, fleſhy; *lignoſa*, woody ſubſtance; *coriacea*, leathery ſubſtance; *membranacea*, membraneous, of thin dry membranes; *didyma*, twin capſules; *emarginata*, notched in the margin; *biſulcata*, two-furrowed; *triſulcata*, three-furrowed; *ſtriata*, ſtreaked, or ſuperficially furrowed; *glabra*, ſmooth; *echinata*, (hedge hog) prickly; *tomentoſa*, downy, *hiſpida*, briſtly or ſhaggy; *nuda*, naked, oppoſed to *hiſpida*; *pellucida*, pellucid, or tranſparent; *colorata*, coloured, as in *celaſtrus*; *elaſtica*, elaſtic, burſting elaſtically like a ſpring, and darting the ſeeds from their departments with great velocity, as in ſome ſpecies of *impatiens*, or balſamine, and many others. See ELASTICA.

The number of Capſules ſucceeding each flower, is generally the ſame as the *germina*, or ſeed-bud; for the Capſule and all other ſeed-veſſels is nothing elſe than the ſeed-bud, or germen, arrived at maturity. See GERMEN. The ſeed-veſſel therefore conſiſts either of one Capſule, as in lychnis; two, as in pœony; three, as in lark-ſpur; four, as in rhodiola, or roſe-root; five, as in columbine, &c.

Capſules in ſplitting, or opening, are divided externally into one or more pieces, or openings, called *valves*. See VALVULA. This opening of the Capſule for diſcharging the ſeeds when ripe, is ſometimes at the baſe, ſometimes on the ſide, through a ſmall hole, as in *campanula*; in ſome horizontally; and in ſome longitudinally, as in *convolvulus*; but the moſt uſual opening, in moſt plants, is at the top, and burſt in as many different ways as there are valves.

CARDAMINE, Ladies Smock, or Cuckoo flower.

It compriſes ſome low, herbaceous, flowering perennials of ornamental appearance, proper for adorning the pleaſure ground.

Claſs and order, *Tetradynamia Siliquoſa*.

*Characters.*] CALIX, four oval, oblong, deciduous leaves. COROLLA, four oblong cruciforme petals, the lower part erect, and ſpreading above. STAMINA, ſix filaments, four the length of the calix, and two much longer, and heart-ſhaped erect antheræ. PISTILLUM, a cylindric germen, no ſtyle, but a capitated ſtigma PERICARPIUM, a long, cylindric, compreſſed, bilocular pod, opening ſpirally, and darting out the ſeeds with elaſtic force.

There is but one ſpecies that have claim to attention, which admits of ſome varieties, which are,

CARDAMINE *Pratenſis*.

*Common Meadow Ladies Smock* ] Cardamine with creeping ſtringy roots, crowned by many winged roundiſh-lobed leaves, ſpreading on the ground, and ſeveral ſmall ſtalks, a foot high, garniſhed with lanceolate-lobed leaves, and many flowers, in May and June.

*Varieties of this are*] Common Ladies Smock with ſingle purple flowers——with double purple flowers——ſingle white flowers——with double white flowers.

The flowers of the ſingle kind have four petals, but thoſe of the double ſorts are multiplied to the very center. The ſingle ſorts embelliſh the meadows in great abundance in May, from whence the double ſorts were firſt accidentally obtained, which are highly ornamental and proper furniture for the flower-borders, and will proſper in any ſituation, but delights moſt in moiſt ſhady places, where they generally produce larger, more beautiful, and durable flowers. They are all eaſily

propagated by ſlipping or dividing the roots in autumn or early in ſpring, and all the ſlips, if not parted very ſmall, will readily flower the following May.

CARDUUS, the Thiſtle.

It comprehends many hardy herbaceous annuals, biennials, and perennials, growing from one to five or ſix feet high, having compound flowers in ventricoſe, ſcaly, very prickly cups, but being moſtly very troubleſome weeds, are rarely admitted in gardens.

CARDUUS *Benedictus*. See CENTAUREA.

CARICA, the Papaw, or Pepo-tree.

This genus furniſhes two curious hot-houſe exotics of tree-like growth, adorned with beautiful, large, divided leaves, and monopetalous and quinquepetalous, white, yellow, and purple flowers, ſucceeded by very large, fleſhy, eatable fruit.

Claſs and order, *Dioecia Decandria*.

*Characters.*] CALIX, male and female flowers on ſeparate plants, the males having ſcarce any cup, and the females a ſmall permanent one, quinquefid at top. COROLLA, the males a funnel-ſhaped, long, tubular petal, cut into five narrow, blunt, revolute ſegments; and in the females five long ſpear-ſhaped petals turned back at top. STAMINA, ten filaments, five of them alternately ſhorter than the other, and oblong antheræ. PISTILLUM, an oval germen, very ſhort ſtyle, and five broad crenated ſtigmas. PERICARPIUM, a large, oblong, fleſhy, baccaceous, unilocular fruit, full of ſmall oval ſeeds.

The ſpecies are,

[1]CARICA *Papaya*.

*Common Indian Papaw.*] Carica with an upright, thick, ſoft, hollow, naked ſtem, riſing twenty feet high, garniſhed upward with very large, divided, deeply ſinuated-lobed leaves, ſpreading two or three feet on every ſide, and male flowers in white cluſters on long foot ſtalks, yellow or purple female ones growing cloſe round the ſtem, ſucceeded by very large, fleſhy, yellow, different-ſhaped fruit.

*Varieties.*] Common Papaw with male flowers—with female flowers,—With melon-ſhaped fruit—with gourd-ſhaped fruit——with pear-ſhaped fruit—with pyramidal fruit.

[2]CARICA *Poſopoſa*.

*Branching Surinam Papaw.*] Carica with an upright branching ſtem twenty feet high; large divided leaves, having entire lobes, ſpreading widely every way; and reddiſh male flowers in cluſters, and female ones cloſe to the ſtem, ſucceeded by very large, pear-ſhaped, yellow fruit.

Both the ſpecies produce male and female flowers on ſeparate plants, ſo that the female plants only produce the fruit.

All the varieties are very ornamental in their beautiful, very large, many-lobed leaves, making a fine appearance in the ſtove at all ſeaſons, and ſome of them flower here annually; and thoſe of the females are ſucceeded by ripe fruit, which, however, ſeldom ripen in perfection enough to be eatable.

Theſe plants are propagated by ſowing the ſeed in a hot-bed in March or April, and when the plants are two inches high, prick them in ſeparate ſmall pots of light rich earth, and plunge them in a bark-bed; and towards autumn place them in the ſtove to remain, giving but very light waterings in winter, but in ſummer it muſt be frequently repeated; and as the plants advance in growth, ſhift them into larger pots; at each ſhifting be careful to preſerve the ball of earth to the roots.

The plants are free ſhooters; and in this country they often attain from ten to twenty feet ſtature in three or four years.

CARPINUS, the Hornbeam-tree.

This genera furniſhes two ſpecies and ſome varieties of hardy deciduous foreſt and ornamental trees, of ſtature from ten to ſeventy feet, garniſhed with ſimple oblong leaves, and amentaceous or katkin flowers.

Claſs and order, *Monoecia Polyandria*.

*Characters.*] CALIX, male and female flowers apart on the ſame plant, growing each in a looſe ſcaly amentum, each ſcale containing one flower. COROLLA, no petals in the males, but a cup-ſhaped ſix parted corolla in the female katkins. STAMINA, ten filaments, and compreſſed hairy antheræ. PISTILLUM, two ſhort germens, four ſtyles, and ſimple ſtigmas. PERICARPIUM, none; the amentum enlarges, containing at the baſe of each ſcale an oval angular nut.

The ſpecies are,

[1]CARPINUS *Betulus (Vulgaris.)*

*Common Hornbeam.*] Carpinus with an upright ſtrait ſtem from thirty to ſeventy feet ſtature, feathered from the bottom, and terminating in a very branchy head, adorned with oval, oblong, rough leaves, withering in autumn, but remain firmly attached to the branches till ſpring, and with plane ſcales to the cones, furniſhing abundance of ripe ſeed in autumn.

*Varieties*

*Varieties of this are*] Common Hornbeam with plain green leaves—Variegated-leaved Common Hornbeam——Virginia Hornbeam growing thirty or forty feet high, closely garnished with longish, rough, deep-green leaves, falling off in autumn, and the longest cones——Oriental Hornbeam growing ten or twelve feet high, closely branching from the bottom horizontally, garnished with oval spear-shaped leaves, and very short cones.

[2]CARPINUS *Ostrya.*

*Ostrya, or Hop Hornbeam.*] Carpinus with an upright stem, attaining twenty feet stature, terminating in a regular head, garnished with oval, oblong, rough leaves, and hop-like fruit, having inflated scales.

*Variety.*] Virginian Flowering Hop-Hornbeam growing thirty feet high, having long rough leaves and yellowish flowers, succeeded by hop like fruit.

All the varieties of both these species of *Carpinus* are very hardy, and will prosper in almost any soil and exposure, and of which there are varieties well adapted both for use and ornament.

As to the Common Hornbeam, it flourishes not only in good ground, but in any hungry barren soil, light or stiff, as well as in all hilly and other bleak exposed places, and is very proper to be planted as a forest tree, and for ornament in parks, either as single standards, or in clumps or large plantations; and as it retains its leaves all winter, it affords shelter to less hardy trees, and is therefore well adapted to border plantations, to break the northerly and boisterous winds.

This tree is also remarkably well adapted for hedges, either by way of ornament or shelter, for it is feathered to the very bottom, and may readily be trained to any desired height.

As the timber of this tree is valuable for many œconomical uses, a wood of them may be easily raised on any soil to advantage, planting four or five year old plants in rows four or five feet distance, and half that in the lines, and after a few years growth every other tree in the row may be thinned for use, so continuing to thin them as often as their heads touch.

The other sorts are also very proper for large ornamental plantations to encrease the variety, and the oriental kind is particularly well adapted for low close hedges; all the others, being also generally pretty well feathered, may also be used occasionally for that purpose.

*Propagation of all the Sorts.*

The common sort may be raised plentifully from seed sown in autumn in four feet wide beds, covering it an inch deep, and in the second spring the plants will rise, which in a year or two should be transplanted in the nursery, in rows two feet and half distance, and half that in the rows; and when from three to six or eight feet high, are fit for any plantation, useful and ornamental.

This sort may also be raised abundantly by layers in autumn, which will be rooted and fit to transplant by that time twelvemonth.

All the other sorts may also be raised easily from seed and layers, but the latter method is the only way to continue the different varieties distinct.

CARTHAMUS, Bastard Saffron.

The plants of this genus consists of some ornamental herbaceous annuals and perennials, producing stalks two or three feet high, crowned by yellow and blue compound flowers.

Class and order, *Syngenesia Polygamia Æqualis.*

*Characters.*] CALIX, a compound flower, having the general cup composed of many leafy scales broad at the base. COROLLA is composed of many hermaphrodite florets, divided at top into five erect segments. STAMINA, five short filaments, and cylindric tubular antheræ. PISTILLUM, a short germen, slender and simple stigma. PERICARPIUM, none; a single seed in each floret lodged in the calix.

The species are,

[1]CARTHAMUS *Tinctorius.*

*Dyer's Carthamus, or Common Bastard Saffron.*] Carthamus with an upright, smooth, branchy stalk a yard high, garnished with oval, entire, spiny serrated, close-sitting leaves, and all the branches crowned by large single heads of saffron-coloured florets, extending an inch above the calix.

The flowers of this species are used in dying, and for medicinal purposes.

[2]CARTHAMUS *Lanatus.*

*Woolly Carthamus, or Yellow Distaff Thistle.*] Carthamus with bottom leaves, pinnatifid, hairy, and prickly; an upright woolly stalk two feet high, branching above, garnished with sinuated, hairy, spinous leaves, their base embracing the stalks, and all the branches surmounted by single heads of yellow flowers.

[3]CARTHAMUS *Cæruleus.*

*Blue Perennial Carthamus* ] Carthamus with upright,

upright, channelled, ſingle ſtalks, two feet high; broad, ſpear-ſhaped, indented, ſpinous leaves; and one blue flower terminate each ſtalk.

[4]CARTHAMUS *Tingitanus.*

*Tangier Blue Perennial Carthamus.*] Carthamus with the radical leaves pinnated; upright ſlightly branching ſtalks a foot and half high, garniſhed with pinnatifid prickly leaves, and one blue flower terminates each ſtalk.

The flowers of all the ſorts are compound, conſiſting of many florets in very large, leafy, ſcaly, cups, which, in all the ſorts, appear in July and Auguſt, and the ſeed ripens in autumn: they all ſucceed in the open borders, and will add to the variety of flowering plants.

The two firſt ſorts are hardy annuals, and may be ſown in March in the places where it is deſigned they ſhall flower; or if ſown in a hot-bed it will forward them, ſo plant them out in May.

The two perennial ſorts are propagated by parting their roots in autumn or ſpring; or by ſeeds in a bed of light earth in March.

CARUM, *Carvi*, or Caraway.

It compriſes but one ſpecies, an herbaceous, umbelliferous, aromatic biennial, eſteemed for its ſeeds for cookery and medical uſe.

Claſs and order, *Pentandria Digynia.*

*Characters.*] Umbelliferous flowers, each general umbel compoſed of ten ſmaller, and each floret of five petals, having five ſtamina, two ſtyles, and two ſeeds.

The ſpecies is,

CARUM *Carvi.*

*Common Carvi, or Caraway.*] Carum with a long, taper, perpendicular, white root, crowned by winged, finely, many-parted leaves, on long foot-ſtalks, and one or two erect, channelled, branchy ſtems, two feet high, having all the branches terminated by umbels of white flowers in June, and ripen ſeeds in autumn.

It is propagated by ſeed in the open ground in ſpring or autumn, ſowing them either in ſhallow drills, or by broad-caſt, and rake them in; and when the plants are come up two or three inches high, hoe them to five or ſix inches diſtance, which in ſpring following will ſhoot up ſtalks, and produce flowers and ſeed, and the plants ſoon after periſh.

If the ſeeds are ſown in autumn, the plants will come up, ſtand the winter, and produce ſeeds the following ſummer.

CASSIA, Wild Senna.

It conſiſts of trees, ſhrubs, and herbaceous plants, of American growth, adorned with winged many-lobed leaves, and quinquepetalous flowers, cultivated here in our ſtoves and pleaſure-grounds for variety.

Claſs and order, *Decandria Monogynia.*

*Characters.*] CALIX, five concave-coloured deciduous leaves. COROLLA, five roundiſh, concave, patent petals. STAMINA, ten declinated filaments, having to the three lower ones large, arched, beaked, open-pointed antheræ, which in the three upper ones are very ſmall, and in the four ſide ones open without beaks. PISTILLUM, a taper germen, ſhort ſtyle, and blunt ſtigma. PERICARPIUM, an oblong pod, having tranſverſe partitions, containing roundiſh ſeeds.

The ſpecies chiefly cultivated in our gardens are,

[1]CASSIA *Fiſtula.*

*Purging Tree-Caſſia of Alexandria.*] Caſſia with an upright trunk, dividing into many branches, and attains forty or fifty feet ſtature; winged leaves of five pair of oval ſharp-pointed lobes; and from the ends of the branches long ſpikes of deep yellow flowers, ſucceeded by round hard pods one or two feet long, containing the ſeeds lodged in a black, ſweetiſh, purging pulp, uſed in medicine.

[2]CASSIA *Biflora.*

*Two-flowered Shrub-Caſſia.*] Caſſia with ſhrubby ſtalks and branches three or four feet high; winged leaves of ſix pair of oblongiſh ſmooth lobes, having ſubulated glands between, and foot-ſtalks from the axillas, each ſupporting two flowers, ſucceeded by jointed plane pods.

[3]CASSIA *Ligufirina.*

*Privet-lobed Shrub Caſſia.*] Caſſia with a ſhrubby ſtalk, branching three or four feet high; winged leaves of ſeven pair of ſmall ſpear-ſhaped lobes or folioles, the laſt pair the ſmalleſt; and from the upper parts, bunches of yellow flowers, ſucceeded by oblong compreſſed ſeed-pods.

[4]CASSIA *Marilandica.*

*Maryland Herbaceous Wild Senna.*] Caſſia with black, fibrey, perennial roots; upright annual ſtalks near a yard high; winged leaves of eight or nine pair of oval oblong lobes; and the ſtalks terminated by looſe ſpikes of yellow flowers, but rarely any ſeeds here.

The flowers of all the ſorts ſeparately are compoſed of five concave petals, appearing in July, and other times in ſummer, ſometimes ſucceeded by pods in England.

The

The firſt three ſorts being natives of warm climates, in this country muſt be potted, and retained always in the ſtove; the firſt of which, *(Caſſia Fiſtula)* though in its native ſoil, Ægypt and India, it obtains a conſiderable ſtature, rarely grows higher than eight or ten feet here; ſo that this and the other two ſhrubby ſorts are within the limits of our ſtoves, where they will flower annually and make a good appearance, and their long pods will effect a ſingular variety.

The above three plants ſhould be kept in pots of light earth, plunged in the bark-bed of the ſtove, giving frequent waterings in ſummer, but more ſparingly in winter.

The fourth ſort *(Caſſia Marilandica)* is hardy enough to proſper in a dry ſoil in the full air, and is proper furniture for the common flower-borders, where its flowers will make a beautiful appearance.

*Propagation.*

The firſt three ſhrubby ſorts are raiſed from ſeeds procured from abroad, ſowing them in ſpring in pots of light ſandy earth, plunging them in a hot-bed, and when the plants are three inches high, prick them in ſeparate ſmall pots, plunging them alſo in a hot-bed or bark-bed of the ſtove, giving ſhade and water, and freſh air occaſionally, in common with the other plants of that department.

The herbaceous ſort is alſo raiſed from ſeeds procured from America, ſowing them in April half an inch deep in a warm border; the plants will riſe in a month, which in September or October may be planted out in the borders. Alſo by ſlipping the roots.

CASSINE, Hottentot Cherry, and Cape Phillyrea, formerly *Maurocenia.*

Of this genus are two beautiful evergreen African ſhrubs for the green-houſe, adorned with ſimple leaves, and cluſters of white flowers.

Claſs and order, *Pentandria Trigynia.*

*Characters.*] CALIX, a ſmall, five-parted, permanent cup. COROLLA is divided into five ſuboval obtuſe ſegments. STAMINA, five ſpreading filaments, and ſimple antheræ. PISTILLUM, a conical germen, no ſtyle, but three reflexed ſtigmas. PERICARPIUM, an umbilicated trilocular berry, having three ſeeds.

The ſpecies are,

[1]CASSINE *Maurocenia.*

*Maurocenia, or Hottentot Cherry.*] Caſſine with a woody branching ſtem ſix or eight feet high; ſuboval, thick, entire, rigid leaves; and ſmall cluſters of white flowers at the ſides of the branches, ſucceeded by large, roundiſh, red, cherry-like fruit, ripening here in winter.

[2]CASSINE *Phillyrea.*

*Phillyrea of the Cape of Good-Hope.*] Caſſine with a woody branchy ſtem, five or ſix feet high; oblong, ſawed, ſtiff, oppoſite leaves; and ſmall cluſters of white flowers at the ſides of the branches, ſucceeded by red berries, but ſeldom appear in England.

For the other ſpecies formerly of this genus, *Caſſio-berry Buſh*, and *Yapon*, ſee VIBURNUM and PRINOS.

The flowers ſeparately of both ſorts have the corolla divided into five ſpreading ſegments, and the ſeaſon of flowering is July.

Both of the above ſpecies having ſingularly beautiful leaves, appearing very ornamental all the year, merit places in every green-houſe collection; they muſt be kept in pots of rich light earth, and continued in the open air all ſummer, and the green-houſe in winter, managing them as other woody exotics of that department. See GREEN-HOUSE PLANTS.

*Propagation.*

They are propagated by ſeeds, and by layers of their young branches.

Sow the ſeed in ſpring in pots of light earth plunged in a hot-bed, or the ſtove bark-bed, and when the plants are two or three inches high, prick them in ſeparate pots, placing them alſo in a hot-bed, and afterwards gradually harden them to the full air for the remainder of the ſummer.

By layers, chuſe young ſhoots, lay them in ſpring or autumn, and by autumn following they will be rooted, and fit to be planted in ſeparate pots.

CASTRATIO, Caſtration of Plants.

Caſtrated plants are ſuch which are deprived of the male organs, i. e. the antheræ, either by nature, or by having them cut off, as ſometimes practiſed, to try experiments with reſpect to the doctrine of the ſexes of plants. See SEXUS.

CATANANCHE, *Catananche*, or Candia Lion's-foot.

This genus furniſhes hardy herbaceous ornamental plants, obtaining two feet ſtature, adorned with long jagged leaves, and terminated by compound blue flowers.

Claſs and order, *Syngeneſia Polygamia Æqualis.*

*Characters.*] CALIX, compound flowers, having

having a ſcaly, elegant, permanent, general cup. COROLLA, ſeveral broad, tongue-ſhaped, five-parted, hermaphrodite florets. STAMINA, five filaments, and cylindric pentagonal antheræ. PISTILLUM, an oblong germen, ſlender ſtyle, and two revolute ſtigmas. PERICARPIUM, none; oval ſeed, crowned by a downy pappus, lodges in the calix.

There are two ſpecies, a perennial and annual, the former of which only merit culture, which is,

CATANANCHE *Cærulea.*

*Perennial Blue-flowered Catananche.*] Catananche with a fibrey perennial root, crowned by long, narrow, jagged, hairy, proſtrate leaves; upright branchy ſtalks two feet high, garniſhed with ſmall leaves, and all the branches terminated by ſingle heads of blue flowers, having purple bottoms, golden antheræ, and ſilvery cups.

*Variety.*] Perennial Blue Catananche with double flowers.

Theſe are very ornamental flowery perennials, both in their ſingle and double ſtate, continuing in flower from May till September, and ſucceed in the full ground in dry and ſomewhat ſheltered borders, where they will endure many years, and produce flowers and ripe ſeed annually; but being ſomewhat tender, it is proper to keep ſome alſo in pots for ſhelter in winter by way of reſerve.

As to their propagation, the ſingle ſort is propagated by ſeeds ſown half an inch deep, in a bed of light earth in March or April.

Both ſingle and double may alſo be propagated plentifully by ſlipping their roots in autumn, or early in ſpring, but do not ſlip them too ſmall, becauſe the larger the root, the greater number of ſtalks they ſend up for flowering.

CATERPILLARS, deſtructive inſects in our kitchen-gardens, particularly to the cabbages and ſavoys in the end of ſummer.

The ſorts which principally infeſt our gardens, is that yelloviſh green dark-ſpotted Caterpillar, generated from the eggs of the white butterfly, which they are continually depoſiting every where, and in a few days are metamorphoſed to living inſects, ſpreading themſelves ſurpriſingly, and devour the leaves of all the cabbage tribe, firſt attacking the outward leaves, and, if not prevented, continue their depredations to the very heart of the plants.

When our greens, &c. are thus attacked, we have no other remedy than to pick the vermin off repeatedly by hand, which may appear a tedious proceſs, though, in ſmall gardens, it may be ſo far practicable, as greatly to diminiſh their numbers, eſpecially if undertaken before they ſpread conſiderably from their neſt; but in large open grounds the plants often eſcape, when thoſe in more confined places are ſeverely attacked, and more particularly thoſe in the corners of gardens, near walls, buildings, or hedges, which ſhould caution us not to plant any of the cabbage tribe too near ſuch places, nor, if poſſible, where much crowded with trees, for the ſame reaſon.

Beſides the above ſort of Caterpillar, there is a large, dark-coloured, tough-ſkinned ſort, generated in like manner in the heart of the encloſed leaves of the autumn cabbages, ſavoys, &c. and detach themſelves from their lodgement by eating holes through all the leaves.

This Caterpillar alſo burrows in the earth, to the deſtruction of all ſorts of young plants, by eating their ſhanks aſunder; but as it burrows juſt within the ſurface of it, may be readily found, by ſtirring the ground with the fingers about the place.

Our fruit-trees are alſo often attacked in very dry weather by Caterpillars, to the deſtruction of their leaves, &c. nor is there any certain method to deſtroy them, but by picking their neſt off by hand, when practicable, before the vermin begin to ſpread themſelves; or if they have already ſpread, to daſh the trees frequently with water from an engine.

CATESBÆA, Lily-thorn.

There is but one ſpecies, an exotic ſmall-leafed ſhrub of the hot-houſe.

Claſs and order, *Tetrandia Monogynia.*

*Characters.*] CALIX, a monophyllous, four-parted, permanent cup. COROLLA, one funnel-ſhaped, very long, tubular petal, broad and four-parted at top. STAMINA, four filaments, and oblong, erect antheræ. PISTILLUM, a roundiſh germen under the corolla, long ſtyle, and ſimple ſtigma. PERICARPIUM, an oval unilocular berry, containing angular ſeeds.

The ſpecies is,

*Cateſbæa Spinoſa.*] Cateſbæa with a woody, ruſſety, ſpinous ſtem, branching alternately, riſing eight or ten feet high; ſmall roundiſh leaves in cluſters; and very long, pendulent, yellow flowers, ſingly from the ſides of the branches, ſucceeded by oval, fleſhy, ſaffron-coloured berries.

This

This ſhrub muſt be always kept in pots of light ſandy compoſt, and retained conſtantly in the ſtove.

It may be propagated by ſeeds, and by cuttings of its young ſhoots; the ſeeds are procured from abroad, which ſow in pots of light earth, and plunge them in the bark-bed. Cuttings may be planted any time from April till July, in pots plunged in the tan-bed; and if cloſe covered with hand-glaſſes, will facilitate their rooting.

CATKIN, an amentaceous flower, i. e. conſiſts of a great number of chaffy ſcales and flowers, diſperſed along a ſlender thread-like receptacle, hanging downward, and is the male flowers of the trees which produce them, as birch, beech, pine, fir, poplar, walnut, hazel, &c. See AMENTUM.

CAULESCENS *Planta*, from *Caulis* the ſtem, having a ſtem or trunk as in moſt plants, oppoſed to *Acaulis*.

CAULIS, a Stalk or Stem, the firſt and moſt common ſpecies of *Trunk*, expreſſive of that part of a plant or tree which ariſes immediately from the root, produces and ſupports the branches, leaves, flowers, and fruit. See TRUNCUS.

A Stalk, Stem, or Trunk, is either ſimple, ſimple-branching, or compound-branching.

As for example, ſimple Stalks are ſuch as riſe ſingly, and continue undivided from the root to the top; ſimple-branching Stems may be deemed ſuch as either riſe wholly undivided, but ſend out many ſide or lateral branches, or ſuch that proceed ſingly to ſome conſiderable length, and then divide into branches near the top; compound-branching Stems are ſuch that ſoon divide into others, and theſe ſubdivide into many *ramuli* or branches.

As Stems aſſume different directions, ſhapes, and other appearances, the botaniſts diſtinguiſh them accordingly by the following different terms:

*Cauli integri*, entire or ſimple Stalks, and which are either *erecta*, erect, or upright, as in moſt plants; *flexuoſa*, of different directions at each joint; *reclinatus*, reclinating, or bending archways to the ground; *volubilis*, voluble, twining or winding aſcendingly round other plants or any ſupport, either to the left, as in honeyſuckle, hop and black briony; or to the right, as in convolvulus, kidney-bean, &c. *oblique*, growing aſlant; *procumbens*, lying along the ground; *repens*, creeping along the ground, rooting at every joint.

*Cauli Ramoſus*, ſimple-branching Stems, which are alſo either erect, flexuoſe, reclining, voluble, &c. as above, and have different terms according to their modes of branching, as *ramoſus*, branching out laterally; *ramoſiſſimus*, very branchy; *aſcendens*, the branches gradually curving upwards; *diffuſus*, diffuſed, or very ſpreading branches; *brachiata*, large arms, or branches in pairs, each pair ſtanding at right angles with thoſe immediately above and below; *fulcratus*, ſupported by branches deſcending to the earth; *prolifer*, prolific, branching only from the apex or ſummit.

*Caulis Compoſitus*, compound branching Stems, and, according to their modes of branching, are termed *dichotomus*, forked or divided into others, the diviſions by two and two; *ſubdiviſus*, the diviſions ſubdivided into many branches irregularly.

*Articulatus*, articulate, or jointed, compoſed of many joints, having knots at certain diſtances.

*Paraſiticus*, paraſitic, growing out of, and ſupported on other plants or trees, as the miſſetoe.

When Stems are of different figures, they are denominated *Caulis teres*, cylindrical and taper; *anceps*, anticipal, or two-edged; *trigonous*, three-angled; *triqueter*, triquetrous, having three plane ſides; *tetragona*, ſquare, or four-ſided; *pentagona*, five angled; *polygona*, many angled.

When furrowed, ſmooth, rough, &c. they are *Caulis ſulcatus*, deeply furrowed; *ſtriatus*, ſtreaked, or ſuperficially furrowed or fluted; *glaber*, a ſmooth ſurface, oppoſed to *ſcaber*, rough, ſcabby, or full of rigid points or tubercles; *villoſus*, hairy or ſhaggy; *hiſpidus*, hiſpid or briſtly; *aculeus*, prickly; *ſpinoſus*, ſpinous, thorny; *tomentoſa*, tomentoſe, or downy.

Leafleſs and leafy Stalks are termed *Caulis nuda*, naked or leafleſs; *foliatus*, folioſe, or ornamented with leaves, as obtains in moſt plants.

As to duration, Stems are either of one year's duration, *Caulis annua*; of two, *Caulis biennis*; of many years duration, *Caulis perennis*, as obtain in all trees and ſhrubby plants.

CEANOTHUS, New-Jerſey Thea, ſo called from the leaves being there uſed as tea.

This genera retains three ſpecies of the tree and ſhrub kind, one for the ſhrubbery, one for the green-houſe, and one for the ſtove,

ſtove, all garniſhed with ſimple leaves, and numerous ſpikes of quinquepetalous white flowers.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX, a monophyllous, turbinated, acutely five-parted, permanent cup. COROLLA, five roundiſh ſpreading petals. STAMINA, five ſubulated filaments, and roundiſh antheræ. PISTILLUM, a trigonal germen, cylindric ſemitrifid ſtyle, and obtuſe ſtigma. PERICARPIUM, a dry, trilocular, obtuſe berry, having three oval ſeeds.

The ſpecies are,

[1]CEANOTHUS *Americanus.*

*American Deciduous Ceanothus, or New-Jerſey Thea.*] Ceanothus with a ſhrubby very branchy ſtem about a yard high, ſending out numerous reddiſh flexible branches from the bottom upward, garniſhed with oval, ſerrated, pointed, trinorvous leaves, and all the branches and ſhoots terminated by cluſters of white flowers.

[2]CEANOTHUS *Africanus.*

*African Evergreen Ceanothus, or Alaternoides.*] Ceanothus with a woody rough ſtem, and weak purpliſh branches, riſing eight or ten feet high; ſpear-ſhaped, pointed, ſerrated, ſmooth, ſhining green leaves, and cluſters of ſmall greeniſh flowers from the ſides of the branches.

[3]CEANOTHUS *Aſiaticus.*

*Aſiatic Ceanothus.*] Ceanothus with a ſhrubby branchy ſtem, growing four feet high; oval, pointed, cloſe-ſitting, oppoſite leaves; and greeniſh flowers in ſmall cluſters from the ſides of the branches.

The flowers ſeparately of all the ſorts are compoſed of five ſmall petals appearing in July, which of the firſt ſort is ſometimes ſucceeded by ripe ſeeds in England, but never any of the others.

The firſt ſpecies, *Ceanothus Americanus*, is a moſt elegant little flowering ſhrub, as when it flowers it appears wholly covered with bloom, and therefore is well calculated for the moſt conſpicuous compartments of the ſhrubbery plantations, allowing it a moderately dry ſoil and ſomewhat ſheltered ſituation in the fronts of the clumps.

The ſecond ſort is alſo worthy of a place in the green-houſe collection, for the beauty of its ſhining green leaves, appearing ornamental the year round.

The third ſort is alſo retained in ſome of our ſtoves for variety.

*Propagation.*

The firſt ſort is propagated both by ſeeds and layers.

Sow the ſeed in autumn, or as ſoon as they can be procured, in pots of light compoſt a quarter of an inch deep, placing them in a frame, to have occaſional ſhelter in bad weather, and in ſpring plunge them in a hot-bed to bring up the plants, hardening them gradually to the full air in ſummer, but remove them in autumn, to have occaſional ſhelter until March; then plant them out in ſeparate ſmall pots, or in a nurſery-bed in the full ground, where they can be covered occaſionally again the following winter, for they muſt have protection from ſevere froſt the two or three firſt years of their growth.

To propagate them by layers, chuſe ſome of the youngeſt branches in autumn, and lay them in the uſual way, which will be rooted in a twelvemonth, and in ſpring after tranſplant them; or, if you likewiſe lay ſome of the firſt young ſhoots in June or July, you will have the greater chance of ſucceſs.

The ſecond ſort is propagated expeditiouſly by laying down the young ſhoots, either in their own pots, or others placed for the purpoſe; it is likewiſe encreaſed by young cuttings, planted in the ſpring in pots, plunging them in the bark-bed, or any other hot-bed, about two months.

The third ſpecies may be raiſed from ſeeds in pots of light earth, plunging them in the bark-bed, &c. likewiſe by laying the young ſhoots, plunging the pots as juſt directed.

CELASTRUS, Staff-tree.

In this genus are ſome curious evergreen and deciduous ſhrubs for the ſhrubbery and green-houſe of moderate growth, ornamented with ſimple leaves, and bunches of whitiſh five-petalled flowers.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX, a monophyllous unequally five-parted cup. COROLLA, five oval ſpreading-equal petals. STAMINA, five filaments, and very ſmall antheræ. PISTILLUM, a ſmall germen immerſed in a very large receptacle, marked with ten channels; a ſhort ſtyle, and blunt trifid ſtigma. PERICARPIUM, a trigonal, trivalvate, trilocular, coloured capſule, and oval ſeeds.

The ſpecies are as follow: the two firſt are hardy ſhrubs.

[1]CELASTRUS *Bullatus.*

*Studded-fruited Celaſtrus, or Virginia Evergreen Staff-tree.*] Celaſtrus with ſeveral upright, ſhrubby, branching ſtems, four or five feet high; oval, entire, alternate leaves; and at the ends of the branches ſpikes of white flowers,

flowers, ſucceeded by three-cornered, ſcarlet, bullated capſules, which rarely attain perfection in England.

[2]CELASTRUS *Scandens.*

*Climbing Staff-tree, or Baſtard Euonymus.*] Celaſtrus with climbing ſhrubby ſtalks, twining upon ſupport, or about each other, twelve or fifteen feet high; oblong ſlightly-ſawed leaves placed alternate; and greeniſh flowers in bunches at the ſides of the branches, ſucceeded by three-cornered red capſules, ripening here in autumn.

The three following are green-houſe ſhrubs.

[3]CELASTRUS *Pyracanthus.*

*Pyracantha-leaved Evergreen Celaſtrus, or Æthiopian Box-thorn.*] Celaſtrus with ſhrubby, upright, irregular ſtems, and taper brown branches; grows a yard or more high, garniſhed with ſpear-ſhaped, pointed, ſhining green leaves, and cymoſe bunches of whitiſh-green flowers at the ſides of the branches, ſucceeded by oval, trigonous, beautiful red capſules.

[4]CELASTRUS *Buxifolia.*

*Box-leaved Evergreen Celaſtrus* ] Celaſtrus with ſlender, ligneous, jointed, aſh coloured, ſpinous ſtems, and angular ſpinous branches riſing eight or ten feet high; ſmall, longiſh, obtuſe leaves, placed in cluſters irregularly; and cymoſe bunches of whitiſh flowers.

[5]CELALTRUS *Myrtifolius.*

*Myrtle-leaved Celaſtrus.*] Celaſtrus with woody, upright, unarmed ſtems and branches, growing twelve or fifteen feet high; oval, ſerrated, ſtrong, green leaves; and long bunches of whitiſh flowers at the ſides of the branches.

The flowers of all theſe ſpecies are compoſed ſeparately of five oval ſpreading petals, and appear principally in June and July.

The firſt two ſpecies are proper for the embelliſhment of the ſhrubbery compartments, the firſt of which, *Celaſtrus Bullatus*, ſhould have a dry and ſomewhat ſheltered ſituation in the fronts of clumps, and they will retain their leaves moſt of the year; but the ſecond ſort is exceeding hardy, and will proſper any where among trees and tall ſhrubs, on the edge of plantations, or in woods and wilderneſs-works, where they will mount themſelves conſiderably, and their ripe fruit will make an elegant appearance in autumn.

The laſt three ſorts are tender, ſo muſt be always kept in pots to have ſhelter in winter.

They are elegant furniture for the green-houſe collection. Let them be planted ſeparately in pots of rich light mould, and manage them as myrtle and other ſhrubby exotics of the like temperature. See GREEN-HOUSE PLANTS.

*Propagation of all the Sorts.*

The firſt two ſorts are raiſed from ſeeds in beds of light earth; alſo by layers of their young branches.

Sow the ſeeds in autumn, or early in ſpring, an inch deep, in a bed of light fine earth, obſerving, that as the plants rarely riſe till the ſecond ſpring, the beds all the intermediate time muſt be kept clean from weeds; and when the plants riſe, continue the care of weeding and occaſional waterings in ſummer; and after having two years growth in the ſeed-bed, plant them out in nurſery-beds.

Cuttings may alſo be ſtruck by aid of artificial heat.

By layers it is performed in autumn, making choice of the young wood, giving each layer a ſlit at a joint, and they will be rooted, and fit to tranſplant in nurſery-rows.

The three green-houſe kinds may alſo be propagated by ſeeds, layers, and cuttings. Sow the ſeed in pots an inch deep, as ſoon as they can be procured in autumn or ſpring, and place them in a frame, to have ſhelter in bad weather, and occaſional ſhade in ſummer; and when the plants are a year old plant them in ſeparate pots.

Cuttings planted in pots in ſpring, and plunged in a hot-bed a month or two, they will readily emit roots.

Layers of the young branches in ſpring will be rooted by autumn.

CELOSIA *Amaranth*, or Cock's-Comb.

This genus furniſhes beautiful ornamental annuals, riſing from one to five or ſix feet high, garniſhed with large oval or ſpear-ſhaped leaves, and crowned by moſt elegant large heads of flowers, in ſome reſembling the figure of a cock's comb.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX, a coloured, ſmall, three-leaved, permanent cup to each floret. COROLLA, five ſpear-ſhaped, erect, ſtiff, permanent petals, ſhaped like the calix, and a ſmall nectarium attached to the border of the germen. STAMINA, five filaments, and turning antheræ PISTILLUM, a globoſe germen, erect ſtyle, and ſingle ſtigma. PERICARPIUM, a ſmall globular capſule of one cell, and very ſmall roundiſh ſeeds.

There are ſeveral diſtinct ſpecies, all very beautiful garden-flowers; but the ſort called

Cock's-Comb is the moſt grand and elegant of all, and which is the ſort moſt commonly cultivated in our gardens, and the firſt ſpecies here deſcribed, which admits of ſeveral varieties in reſpect to ſtature, and in the colour of the flowers.

The ſpecies are,

[1]CELOSIA *Criſtata.*

*Creſted Flowered Amaranth, or Cock's-Comb.*] Celoſia with an upright, ſingle, ſtiff ſtalk, from one to five or ſix feet high, ornamented from bottom to top with large, oval-ſpear-ſhaped leaves, on angular foot-ſtalks, and the main ſtalk crowned by a large, creſted, flowery head, compoſed of numerous ſmall florets.

*Varieties of this are*] Dwarf Cock's-Comb, from ſix inches to a foot and half high, with large purple heads of flowers—with red heads ——with ſcarlet heads—and with yellowiſh heads.——Giant Cock's-Comb, from a yard to five or ſix feet high, with very large purple heads——with red heads—with ſcarlet heads—with yellowiſh heads——with white heads——and with variegated heads.——Branching Cock's-Comb, dividing into ſeveral branches, each terminated by ſmall heads, of which are purple, red, buff-colour, &c.

[2]CELOSIA *Margaritacea.*

*Pearly-coloured Spiked Celoſia.*] Celoſia with an upright branchy ſtalk two feet high; ſpear-ſhaped, pointed, pale leaves; and the main ſtalk and every branch terminated by ſmall, oblong, erect, pearly-coloured heads, forming ſpikes the ſize of a finger.

*Varieties.*] Pearly Celoſia with oblong ſpikes of equal thickneſs—with pyramidal ſpikes—with entire white ſpikes—with white and red ſpikes.

[3]CELOSIA *Coccinea.*

*Indian Scarlet Spiked Celoſia.*] Celoſia with an upright, large, round, furrowed ſtalk, a yard or more high; oval gathering leaves; and the ſtalks terminated by ſeveral ſmall bright ſcarlet heads, forming ſpikes.

*Varieties.*] Indian Scarlet Celoſia with creſted ſpikes—with incurved creſted ſpikes—and with plumed ſpikes.

[4]CELOSIA *Lanata.*

*Downy Cluſtered-ſpiked Celoſia.*] Celoſia with an upright, downy, white ſtalk, two feet high; lanceolate, obtuſe, very downy leaves; and the ſtalk and branches terminated by cluſtered ſpikes of flowers, having woolly ſtamina.

[5]CELOSIA *Caſtrenſis.*

*Dwarf Creſted Spiked Celoſia.*] Celoſia with an upright very branchy ſtalk a foot and half high; lanceolate acutely-pointed leaves; and all the branches terminated by creſted ſpikes of flowers of ſeveral varieties.

The flowers of all theſe ſpecies, though ſeparately very ſmall, being exceeding numerous, and collected into large compact creſted heads, or in oblong ſpikes, appearing as one large flower, are extremely conſpicuous and elegant, and exhibit a grand appearance in a garden from July to October, particularly the firſt ſpecies, Cock's-Comb and varieties, which produce their flowers in very large plumes or creſted heads, generally but one plume crowning each plant, in ſize from four or five to fifteen inches longways over the crown, and from two to five or ſix broad, and of proportionable depth.

Of the firſt ſpecies, *Celoſia Criſtata*, are two principal varieties, the Dwarf and Giant Cock's-Comb; the former of which, though dwarfiſh, is of very robuſt growth, leaved to the bottom, and crowned by elegant heads, and is eſteemed a curioſity; but the Giant ſorts make the grandeſt ſhew, as, with due culture, they attain at leaſt a yard, but frequently five or ſix feet ſtature, decorated from the very bottom with elegant large foliage, and ſurmounted by wonderful large fine heads: they however require great attention to bring them to real perfection, needing the aid of three or four different hot-beds, and different-ſized deep frames, to draw them up tall; but the dwarf ſorts may be raiſed in tolerable perfection by the aſſiſtance of two hot-beds and common frames, and are therefore the propereſt ſort for gardens that are not well furniſhed with hot dung and garden-frames.

The principal property of a fine Cock's-Comb is, a perfectly upright ſtrait ſtem free from ſide-branches, well furniſhed all the way with leaves; and the plume of flowers large, erect, cloſe, and regular, without any ſide-ſhoots or ſmaller heads.

The other four ſpecies of this genus, though not ſo generally known and eſteemed as the Cock's-Comb kind, however, are very ſhowey plants, and form an elegant variety among the Combs and other curious annuals, and one method of culture brings them all to perfection.

All the five ſpecies are herbaceous, and of the annual tribe, exotics of moſt delicate temperature, being natives of the hot parts of Aſia and America, and, in their culture here, require

require to be raiſed and forwarded in at leaſt two or three different hot-beds from March till June or July; that is, raiſing them from ſeed in one in March, pricking them out into another in April, and to have them very fine, tranſplant them into a third in May, to remain until the end of June or beginning of July, when they will have attained nearly their full ſtature, their heads tolerable perfection, and the weather will be then ſettled and warm, and ſhould be placed abroad, where their heads will continue their full luſtre till October, at which time they ripen ſeeds, then gradually decay, and November cold puts a total period to their exiſtence; ſo that a freſh ſupply muſt be annually raiſed from ſeed in ſpring.

All the ſorts are generally planted in pots, particularly the Cock's-Combs, to arrange in fore courts, or to move to any place where a grand ſhew is at any time occaſionally wanted; but, if required, ſome may alſo be raiſed for the borders, without employing ſo much nicety in their culture as thoſe you intend to pot for the grand ſhew; but even in this caſe two different hot beds is requiſite, raiſing them in one, and pricking them out into another, to remain till June.

*Propagation, General Culture, &c.*

As before obſerved, all the ſorts are raiſed from ſeeds annually in hot-beds under frames and glaſſes, and the proper time to ſow them is the beginning or middle of March.

Obſerve alſo, as already hinted, that to have theſe plants as fine as poſſible, three different hot-beds are neceſſary in their culture; that is, a ſmall one in March, wherein to ſow the ſeed and raiſe the plants an inch or two high; a ſecond in April of larger dimenſions, in which to prick the plants three or four inches diſtance; and a third in May for a large frame, to receive them tranſplanted into pots, to remain until the end of June or beginning of July to grow to full ſize; all of which hot beds muſt be covered with frames and glaſſes, and have five or ſix inches depth of fine rich light earth for the reception of the ſeed and plants; and in the ſecond and third hot-bed the frames muſt be occaſionally raiſed or augmented in depth according as the plants ſhall riſe in height, which is to be particularly attended to in the Giant Cock's-Comb.

Therefore, whoever intends the culture of theſe plants, ought to be well furniſhed with hot dung, and different-ſized frames and glaſs lights. See ANNUAL PLANTS.

The firſt hot-bed in March, for the reception of the ſeed and raiſing the plants an inch or two high, need not be larger than for a one-light frame, which will raiſe a due quantity of theſe and other curious annuals for furniſhing any private garden, obſerving to make the bed two feet and half depth of dung, and directly put on the frame and glaſs, and in four or five days, when the rank ſteam and firſt violent heat abates, put on the mould, which muſt be light, rich, and dry, laying it four or five inches thick; then either ſow the ſeed on the ſurface, and cover it half a quarter of an inch deep; or draw very ſhallow drills with the finger, ſow it therein, covering it the ſame depth; this done, immediately put on the glaſs again, and tilt it a little in the middle of mild days for the evaporation of the ſteam, &c. the plants will appear in a few days, when air muſt be judiciouſly admitted, by tilting the upper-end of the light an inch or two high every mild calm day; and when the earth appears dry, give very light ſprinklings of water in ſunny weather, keep the glaſs cloſe on nights, and continue to cover it with a mat; and in this manner continue the care of the plants till large enough to be pricked into another hot-bed, which will be in about three weeks.

About the middle of April therefore, or a little before or after, when the plants are an inch or two high in the ſeed-bed, another hot-bed for a two or three-light frame muſt be got ready to prick them in, as juſt hinted; make this bed alſo about two feet ſix inches, or a yard thick of dung, place the frame and glaſſes thereon, and when the burning quality of the bed ſubſides, mould it five or ſix inches deep, and next day, when the bed has imparted a due warmth to the mould, raiſe the plants with care from the ſeed-bed, and prick them in this, four or five inches diſtance; give a very light ſprinkling of water, and directly put on the lights, and give occaſional ſhade in ſunny days till the plants are rooted, obſerving to admit freſh air every fine day, as above; give alſo occaſional very light waterings every two or three days, and defend the glaſſes on nights with mats, as before adviſed; and, according as the plants advance in height, raiſe the frame a little in proportion: here they may grow a month or five weeks, by which time they will meet, when they muſt be moved into a third and final hot bed, pre-

viouſly planting ſome of the beſt ſingly in pots, as hereafter directed.

Their ſecond removal will be neceſſary towards the middle of May, or when the plants in the above ſecond bed are ſo much advanced as to preſs againſt each other, when a third and final hot-bed ſhould be made for one or more of the largeſt frames, to receive the plants in pots, obſerving, if you raiſe principally the Dwarf ſorts, one of the deepeſt common garden-frames may be ſufficient, with a little occaſional raiſing at bottom; but for the Giant ſorts, which ought to be drawn up at leaſt three or four feet high, a deep drawing-frame, or rather a multiplying drawing-frame of two or three diviſions, that the depth can be occaſionally augmented, is neceſſary; or, in default thereof, any common frame, raiſed occaſionally upon four poſts: and for the more commodiouſly uſing theſe drawing-frames for the tall Cock's-Combs, the hot-bed ſhould be ſunk eighteen inches in the ground, by making it in a trench that depth; but where there is a glaſs-caſe, calculated on purpoſe for drawing curious annuals, this third hot-bed for the tall ſorts ſhould be made in that department. See ANNUAL PLANTS. Let the hot-bed in either method be two feet ſix inches at leaſt depth of dung, which, when of due temperature, earth five or ſix inches thick, and next day proceed to put in the plants, obſerving, that ſuch as you intend for pots, both of the Dwarf and Giant kinds, ſhould now be potted, and the pots called twenty-fours are the proper ſize, one plant to each pot, being careful to take up the plants out of their preſent bed with a garden trowel, ſo as to preſerve a ball of earth to the roots of each plant; place one in each pot with the ball entire, and fill up round the ball with more rich earth; give ſome water, and directly plunge the pots to their rims in the earth of the bed, placing them cloſe together every way; at the ſame time let all the cavities between be cloſely filled with mould, that the ſteam may no where ariſe immediately from the dung, which would attack and deſtroy the leaves of the plants. The plants being thus all potted and plunged, put the glaſſes immediately on the frame, and ſhut them down cloſe to draw up the heat, but raiſing them a little the next, and every ſucceeding day, that the ſteam may paſs off: be now careful to ſhade the glaſſes in the middle of ſunny days for the greateſt part of the firſt week till the plants have taken good root; freſh air during their reſidence here muſt alſo be daily admitted, by tilting one or both ends of the lights more or leſs in fine weather, in proportion to the advanced growth of the plants; water muſt likewiſe be afforded them twice a week, or oftener, when the weather is very hot and ſunny, and every night continue to protect them from cold by ſhutting the glaſſes cloſe, and cover them with mats; attention muſt alſo be had to maintain a conſtant moderate temperature of heat in the bed, by occaſional moderate linings of hot dung to its ſides, and by obſerving this, together with a proportionable ſupply of freſh air and moiſture, the plants will now make great progreſs, and their heads will encreaſe conſiderably in magnitude.

Likewiſe obſerve, that according as the plants of the large ſorts advance in ſtature, to afford them due ſcope to ſhoot, by augmenting the depth of the frame by ſome of the methods above obſerved, and as explained in the article ANNUAL PLANTS.

With regard to the Dwarf ſorts, if deſigned to have them in their natural dwarfiſh growth, they muſt not be drawn in deep frames, &c. like the others; ſo that the frame containing them need be only a little raiſed by degrees at bottom, continuing the glaſſes always near the heads of the plants, to prevent their drawing up too much to ſtem, which, as it is not their natural growth, if they were much drawn, it would render them weak, and their heads would be but of inconſiderable ſize.

Towards the latter end of June the plants in general will be well advanced in growth, and the weather well ſettled and warm, when it is proper to begin to harden them gradually to the full air, by raiſing the glaſſes every day more and more at each end on props, and by degrees take them wholly off, and in the firſt week in July remove the plants in their pots fully abroad, where they are finally to remain; at the ſame time let each of the tall ſorts be ſupported with a ſtrait, firm, handſome ſtake, tying the ſtem of the plant thereto in three different places.

When placed in the open air, by no means neglect watering them in dry weather, which, when very hot and ſunny, the waterings ſhould be repeated every day; for, if not duly ſupplied with this article, the leaves will ſhrink, and the heads of the flowers become irregular.

When deſigned to raiſe any of theſe plants for the borders, ſow the ſeed, as before, in the

the middle or latter end of March, and towards the end of April or beginning of May prick the plants in a freſh hot-bed ſix or eight inches diſtance, managing them as already directed until the middle of June; then tranſplant them with balls of earth to their roots in the borders, &c. but theſe will not be near ſo fine as thoſe forwarded by the methods before directed.

All the ſorts perfect their ſeeds in September and October, when great care is neceſſary to ſave it only from the moſt perfect heads; and be particularly careful to preſerve the Dwarf and Giant ſorts of the Cock's-Comb kinds ſeparate; obſerving likewiſe, if very wet cold weather prevail at this time, the plants ſhould be placed in a deep or raiſed frame, for the heads to have occaſional ſhelter of the glaſſes from exceſſive rains.

CELTIS, the Lote, or Nettle-tree.

There are three ſpecies, all of them hardy deciduous trees, with very branchy diffuſed heads, garniſhed with ſimple, oblong, deeply ſawed, alternate leaves, ſomewhat reſembling thoſe of the common ſtinging-nettle; and all three ſpecies are proper for ornamental plantations, and two of them alſo as foreſt-trees.

Claſs and order, *Polygamia Monoecia.*

*Characters.*] CALIX, hermaphrodite and male florets, having monophyllous, five-parted cups COROLLA, no petals. STAMINA, five ſhort filaments, and quadrangular four-furrowed antheræ. PISTILLUM, an oval germen, two reflexed ſtyles, and ſingle ſtigmas. PERICARPIUM, a roundiſh unilocular berry, containing a ſmall roundiſh nut.

The ſpecies are,

[1]CELTIS *Auſtralis.*

*South-European Black-fruited Nettle-tree.*] Celtis with an upright large ſtem and very branchy head, riſing forty or fifty feet high, garniſhed with large, ſpear-ſhaped, pointed, deeply-ſerrated leaves, and greeniſh flowers from the ſides of the branches in May, ſucceeded by round black fruit the ſize of black-berries.

[2]CELTIS *Occidentalis.*

*Occidental, or American Purple-fruited Nettle-tree.*] Celtis with an upright large ſtem, and very branchy ſpreading head, growing forty or fifty feet high; large, oval, ſharp-pointed, deeply-ſawed, oblique leaves; and greeniſh flowers from the ſides of the branches in May, ſucceeded by purple fruit the ſize of large peas.

[3]CELTIS *Orientalis.*

*Oriental, or Eaſtern Yellow-fruited Nettle-tree.*] Celtis with an upright ſtem, dividing into many ſpreading greeniſh branches ten or twelve feet high; ſmall, oval, heart-ſhaped, ſerrated, oblique leaves; and yelloviſh flowers from the ſides of the branches in ſpring, ſucceeded by large, oval, yellow fruit.

*Varieties.*] Of each ſort there are varieties with bloatched leaves.

The flowers of all theſe trees are hermaphrodites and males on the ſame plant; but thoſe of both ſex being devoid of petals, make no ornamental appearance, and the hermaphrodites only ſucceed to fruit, which, in favourable autumns, ripens tolerably well in England.

All the three ſpecies are deciduous, and of temperature hardy enough to proſper here in any expoſure and ſoil in common with other hardy trees and ſhrubs.

For purpoſes in gardening, they are well calculated for all ornamental plantations, being finely clothed with leaves of a delightful green, which continue their verdure in a ſingular manner to the very laſt, not like moſt other trees of the deciduous race, whoſe leaves diſcover their approaching decay by their gradual change of colour; but theſe exhibit themſelves a beautiful green till November, and even till their fall, about the middle or end of that month; ſo that they are peculiarly well-adapted for plantations, on the boundaries of ſpacious lawns, grand wilderneſs-works, and for the moſt conſpicuous parts of parks, either placed in clumps, or as ſingle objects.

The firſt and ſecond ſorts may alſo be employed as foreſt-trees in any œconomical plantation; for they are of free growth, and their wood being tough and pliable, is valuable for various uſes.

*Propagation.*

The propagation of all the ſorts is effected by ſeeds, either of Engliſh or foreign growth, which may be had of the ſeedſmen, and which grow freely in the full ground.

The bloached-leaved kinds, however, can only be continued by layers, cuttings, or by grafting, &c.

The ſeeds of the others may be ſown in autumn or ſpring; but by ſowing in autumn ſoon after the ſeeds are ripe, they commonly riſe freely the following ſpring; and the ſpring-ſown ſeeds often riſe ſtraggling, and ſometimes remain a whole year before they germinate: let the ſeeds, however, be ſown

as

as ſoon as they can be procured, either in pots, boxes, or in a warm rich border, covering them half an inch deep. When the plants appear, if cold nights prevail, afford them occaſional ſhelter of mats; and in dry hot weather, while the plants are very ſmall, ſhade in the the middle of parching ſunny days will be ſerviceable: likewiſe encourage them during ſummer by frequent waterings. In autumn and winter protect them from froſt by occaſional coverings, as above; and in the end of March, or in April following, prick them out from the ſeed-bed into another in a ſheltered ſituation, placing the plants in rows a foot aſunder; after this they require no farther care than occaſional weeding, and in two or three years they will be ready for the ſhrubbery or other plantations.

If you at any time ſow theſe ſeeds in ſpring, let it be in large pots, or in boxes, &c. and if the plants do not appear, remove them to the ſhade in ſummer, and ſhelter of a warm wall or hedge in winter, to ſtand till ſpring; at which time, if you plunge them in a hot-bed, it will bring up the plants quickly, and greatly forward them: the ſame may be practiſed to ſuch as are ſown in pots in autumn.

CENTAUREA, Centaury, Cyanus, Blue-Bottle, &c.

This genus is very extenſive in herbaceous annuals, biennials, and perennials, to the amount of ſixty ſpecies, moſtly of upright growth, from one to five or ſix feet ſtature, dividing into branches, crowned by ſcaly heads of compound flowers.

A few of them are ornamental plants, and ſome proper for medicine; but far the greater part are plants of little or no merit.

Claſs and order, *Syngeneſia Polygamia Fruſtanea.*

*Characters.*] CALIX, compound radiated flower, having a roundiſh ſcaly empalement. COROLLA, the diſc compoſed of many hermaphrodite fruitful florets, tubular below, ſwelled and five-parted at top; and in the radius, compoſed of neuter or barren florets, tubular, and gradually enlarging, and unequally divided, above. STAMINA, five ſhort hairy filaments, and cylindric antheræ. PISTILLUM, a ſmall germen, ſlender ſtyle, and blunt ſtigma. PERICARPIUM, none; the ſeeds lodge in the calix.

The ſpecies that merit culture are as follow: the firſt five are very hardy perennials, perennial in root, but annual in ſtalk, &c.

[1]CENTAUREA *Centaurium.*

*Greater Purple Centaury.*] Centaury with a ſtrong perennial root, crowned by many winged very long leaves, ſpreading flat every way; upright branching ſtalks five or ſix feet high; a ſmall winged leaf at each joint, and all the branches terminated by a ſingle head of purple flowers in ſmooth cups.

[2]CENTAUREA *Glaſtifolia.*

*Great Woad-leafed Yellow Centaury.*] Centaury with a penetrating perennial root, crowned by many long, entire, erect leaves; ſeveral upright ſtalks four or five feet high, having a ſingle decurrent leaf at each joint; and all the ſtalks terminated by a ſingle head of yellow flowers in ſcaly ſilvery cups.

[3]CENTAUREA *Stœbe.*

*Hoary Stœbe of Auſtria.*] Centaury with a perennial root, crowned by many pinnatifid hoary leaves of many narrow entire ſegments; upright branchy ſtalks a yard high, a winged leaf at each joint, and each branch topped by a head of purple flowers in oblong ciliated cups.

[4]CENTAUREA *Orientalis.*

*Oriental Centaury, or Great Yellow Knapweed of Siberia*] Centaury with perennial roots, crowned by pinnatifid very long leaves of many lobes; upright very branchy ſtalks five feet high, garniſhed with ſmall pinnatifid leaves; and all the branches terminated each by a large ſingle head of yellow flowers in ciliated cups.

[5]CENTAUREA *Montana.*

*Mountain Perennial Blue-Bottle, or Blue Bachelor's-Button.*] Centaury with very creeping perennial roots; many upright ſingle ſtalks a foot and half high, garniſhed with ſpear-ſhaped, hoary, decurrent leaves; and all the ſtalks crowned by oblong heads of blue flowers in ſerrated cups.

*Varieties.*] Broad-leaved Perennial Blue-Bottle—Narrow-leaved Perennial Blue-Bottle—Dwarf Perennial Blue-Bottle.

The two following are perennial in root, ſtalks, and leaves; are rather impatient of ſevere froſt, but will live in the full air in a dry ſheltered ſituation.

[6]CENTAUREA *Raguſina.*

*Raguſian Silvery Knapweed, or Cinara-leafed Centaury.*] Centaury with a perennial root, upright branchy perennial ſtalks a yard high; large, pinnatifid, white, downy leaves, of many oval obtuſe lobes, the exterior ones the largeſt; and all the branches adorned with heads of bright yellow flowers, in June, in fine hairy cups.

[7]CEN-

7 CENTAUREA *Cineraria.*

*White Mountain Napweed of Italia.*] Centaury with perennial roots; upright, branchy, perennial ſtalks, near a yard high; pinnatifid, very white, downy leaves, of many narrow acute ſegments; and every branch crowned by a head of purple flowers in ciliated cups.

The three following are hardy annuals.

8 CENTAUREA *Cyanus.*

*Cyanus, or Annual Blue-Bottle, or Bottles of all Colours.*] Centaury with annual roots; upright branchy ſtalks two or three feet high; narrow leaves, the lower ones indented, thoſe above very narrow and entire; and the ſtalks and branches terminated by ſcaly heads of flowers, of various colours in the different varieties.

*Varieties.*] Common Blue-Bottle with blue flowers—blue and white flowers——purple flowers—purple and white flowers—fleſh-coloured flowers—fleſh-coloured and white flowers——violet-coloured flowers——violet and white flowers—red flowers—double blue flowers——double purple flowers——double purple and white flowers.

9 CENTAUREA *Moſchata.*

*Muſk-ſcented Oriental Cyanus, or Sweet Sultan.*] Centaury with annual roots; an upright, channelled, branchy ſtalk, a yard high, garniſhed with jagged, ſmooth, cloſe-ſitting leaves; and from the ſides of the branches many long, erect, naked foot-ſtalks, each ſupporting a ſingle head of odoriferous flowers in round, ſcaly, ſmooth cups.

*Varieties.*] Sweet Sultan with purple flowers—with white flowers—with fleſh coloured flowers—with purple fiſtulous flowers—white fiſtulous flowers—with fringed flowers—*Amberboi*, or Yellow Fiſtular Sultan, having ſawed leaves, and bright yellow fiſtular flowers.

10 CENTAUREA *Benedicta.*

*Carduus Benedictus, or Bleſſed Thiſtle.*] Centaury with annual roots; very branching, hairy, reddiſh ſtalks, near two feet high; long, deeply-ſinuated, hairy, decurrent leaves, having the ſegments ending in ſpines; and the ends of the branches crowned by heads of pale yellow flowers in oval, ſcaly, doubly-ſpinous cups

The flowers of all the ſpecies and reſpective varieties are compound and radiated; that is, each flower is of many florets, in the centre and circumference, contained in one ſcaly general cup. See the *Characters.*

They all flower in June, July, and Auguſt, and moſtly ripen ſeeds in England.

All the ſpecies, except the *Carduus Benedictus*, may be employed as ornamental plants in the common ground, where, though we have many plants of more ſhowey appearance, they will effect an agreeable variety.

As to the perennial ſpecies, the firſt five are proper furniture for the compartments of extenſive gardens, where many large plants of free growth and eaſy culture are required, as they will ſucceed in any common expoſure and ſoil where moiſture is not too copious. The ſixth and ſeventh ſpecies are rather tender, ſo ſhould have a perfectly dry ſoil and ſheltered ſituation, otherwiſe will be in danger of ſuffering in ſevere winters. A plant or two of each ſort may alſo be potted to move to occaſional ſhelter from froſt; for, as they retain their white hoary leaves all the year, they make a pretty variety in a garden.

The annual ſorts, *Centaurea Cyanus*, and *Centaurea Moſchata*, are pretty ornaments for the borders of the pleaſure-ground. The firſt of theſe annuals grows naturally in our cornfields, particularly the common blue ſort, but which, and its numerous varieties, have alſo been long inhabitants of gardens, and are all very hardy, riſing from ſeed freely in the open borders; but the other ſort and varieties are natives of the Eaſt, from whence they have been long introduced into the European gardens for the beauty of their flowers, which continue in ſucceſſion from June till October: the plants being ſomewhat tender, require to be raiſed in a hot-bed in ſpring, and planted out in May, though they will riſe in a warm border in April; but theſe will not flower ſo ſoon as thoſe raiſed in a hot-bed: the *Amberboi*, or Yellow Sultan, in particular, requires that aſſiſtance.

The tenth ſort, *Centaurea Benedicta*, or *Carduus*, is conſidered principally as a medical herb, and its emetic property is well known.

*Propagation of all the Sorts.*

All the perennial ſorts are propagated by ſeeds and parting their roots, and the ſixth and ſeventh ſorts alſo by ſlips or cuttings of their branches.

Sow the ſeeds of all the ſorts in a bed or border of common earth in March; keep the plants clean from weeds, thin them where too thick, and in autumn following tranſplant them into the places of their final deſtination.

By

By ſlipping the roots; it may be done any time in open weather from October till March

Cuttings or ſlips of the young ſide-branches of the ſixth and ſeventh ſorts, planted in a ſhady border in May, June, or July, will readily grow.

The annual ſorts are raiſed from ſeed annually.

The *Centaurea Cyanus*, or Blue Bottle, and varieties, may be ſown in the borders in patches, in the places where they are to flower, ſowing ſeveral ſeeds in each patch half an inch deep.

The *Centaurea Moſchata*, or Sweet Sultans, will alſo riſe from ſeed in the common ground, ſowing it in March or April, either in the places where they are to flower, as directed for the Blue-Bottles, or in a warm border under hand or bell-glaſſes, or without, and plant them out in May or June into different parts of the borders; but if the ſeeds are ſown in a hot-bed at the above time, it will forward the plants for tranſplanting in May, and they will flower near a month ſooner than the others. The Yellow Sultan in particular, being rather a little tender, ſhould be principally raiſed in a hot-bed, and if pricked on another in April or beginning of May, it will forward them greatly, and about the end of that month, or beginning of June, tranſplant them finally with balls to their roots, placing ſome in pots, and ſome in the borders.

If the ſeeds of the common Sultans are ſown in autumn, ſoon after they ripen, in a warm border, the plants will come up, ſtand the winter, and flower the ſummer following ſooner by a month than the ſpring-ſown plants.

The *Carduus* may be ſown in autumn or ſpring in the common ground; by ſowing in autumn the plants ſtand the winter, grow ſtronger, and will be fit for uſe ſooner than the ſpring plants. The ſeed may either be ſown in ſhallow drills a foot aſunder, and when the plants come up thin them to eight inches diſtance; or ſow the ſeed promiſcuouſly on the ſurface, and rake it in, thinning the plants as above; or they may be ſown thick, and afterwards tranſplanted the above diſtance: they will ſhoot up to ſtalk in May or June, and flower in July, at which period they are in perfection to cut for uſe, cutting it cloſe to the bottom; and after drying in the ſhade a few days, bunch it for uſe.

CEPHALANTHUS, Button-tree, ſo called from its mode of flowering.

There is but one ſpecies, a hardy, deciduous, flowering ſhrub of American growth, garniſhed with ſimple, oblong leaves, and ſmall globular heads of flowers, and is very ornamental for the ſhrubbery.

Claſs and order, *Tetrandia Monogynia.*

*Characters.*] CALIX, aggregate flower, each floret having a monophylious, funnel-ſhaped, quadrifid cup. COROLLA, many monopetalous, infundibuliforme, acute florets, collected into a round head. STAMINA, four ſhort filaments inſerted into the petal, and globoſe antheræ PISTILLUM, a germen under each floret, ſhort ſtyle, and globular ſtigma. PERICARPIUM, none. SEMINA, pyramidal ſolitary ſeeds, placed on a globoſe hairy receptacle.

The ſpecies is,

CEPHALANTHUS *Occidentalis.*

*Occidental Cephalanthus, or Button-tree.*] Cephalanthus with a branchy ſtem ſix or ſeven feet high, branching in pairs; oblong leaves by pairs and threes, having a ſtrong longitudinal nerve, and ſmall ones tranſverſely; and all the branches terminated by aggregate yellowiſh flowers in globular heads the ſize of gooſeberries, each aggregate compoſed of many funnel-ſhaped florets affixed to an axis in the middle.

It flowers here in July, but rarely ripens ſeeds in England.

This ſhrub deſerves a place in every collection, and proſpers in any common ſoil; but delights moſt in ſomewhat moiſt ground.

The propagation of this ſhrub is by ſeed in the full ground, or in pots or boxes, to move to occaſional ſhade or ſhelter; likewiſe by layers and cuttings.

The ſeeds are obtained from America, and may be had of the ſeedſmen, which ſhould be ſown as ſoon as it arrives, near half an inch deep, and probably the plants will riſe the firſt ſpring, though, if ſown late, they ſometimes do not appear till ſpring following; when this is the caſe, keep the earth free from weeds, giving occaſional ſhade in very hot weather, and ſome protection from ſevere froſt, and in ſpring after the plants will riſe in great plenty: theſe the firſt ſummer ſhould be frequently watered in dry weather, and in the autumn, or autumn twelvemonth after, according to their ſtrength, tranſplant them in nurſery rows two feet diſtance, and half that diſtance in the lines, and in two or three years more they will be fit for the ſhrubbery.

By

By layers and cuttings; the young wood, if layed in autumn, will be rooted and fit to tranſplant by that time twelvemonth; and cuttings of the young ſhoots, planted at the ſame time in a moiſt ſhady border, will grow.

CERASTIUM, Mouſe-ear Chickweed.

It conſiſts of ſeveral low herbaceous plants, moſtly trailers, garniſhed with ſmall ſimple leaves, and quinquepetalous white flowers, eſteemed as furniture for the pleaſure-ground.

Claſs and order, *Decandria Pentagynia.*

*Characters.*] CALIX, a pentaphyllous ſpreading cup. COROLLA, five obtuſe, bifid, patent petals. STAMINA, ten filaments, alternately ſhorter, and roundiſh antheræ. PISTILLUM, an oval germen, five capillary ſtyles, and obtuſe ſtigmas. PERICARPIUM is either an oval, cylindrical, or globular unilocular capſule, and many roundiſh ſeeds.

The ſpecies cultivated in our gardens are,

[1]CERASTIUM *Repens.*

*Repent, or Creeping Hoary Ceraſtium.*] Ceraſtium with creeping perennial roots; many ſlender, trailing, branchy, perennial ſtalks, rooting at the joints, garniſhed with ſpear-ſhaped hoary leaves in pairs oppoſite; and numerous branchy pedunculis, each ſupporting one white flower, ſucceeded by roundiſh capſules.

[2]CERASTRUM *Tomentoſum.*

*Tomentoſe, or Woolly Linaria-leafed Ceraſtium.*] Ceraſtrium with perennial roots; many trailing, branchy, rooting, perennial ſtalks; oblong, narrow, very downy white leaves; and many branching pedunculis, terminated by white flowers, ſucceeded by globular capſules.

The flowers of both ſorts are compoſed of five ſmall petals, and being numerous on the plants are very conſpicuous, appearing in May and June.

The plants are hardy, and proſper any where, and being natives of rocky mountains, they are proper furniture for artificial rock-work, ruins, grottos, &c. and will multiply exceedingly, by their trailing ſtalks rooting as they advance at every joint.

Their propagation is effected with the utmoſt facility, either by ſeeds, or ſlipping their rooting branches, or parting their roots; all of which may be performed either in autumn or ſpring.

CERASUS, the Cherry tree. See PRUNUS.

CERATONIA, the Carob tree, or St. John's Bread, or *Siliqua.*

It is a large evergreen exotic ſhrub of the green-houſe, adorned with pinnated leaves, and ſmall apetalous flowers.

Claſs and order, *Polygamia Trioecia.*

*Characters.*] CALIX, males, females, and hermaphrodite flowers, on diſtinct plants, having large five-parted cups. COROLLA, no petals. STAMINA, five long filaments, and large didymous antheræ. PISTILLUM, a fleſhy germen, long ſtyle, and capitated ſtigma. PERICARPIUM, females, a large, obtuſe, compreſſed pod, divided by tranſverſe partitions, each having one ſeed lodged in a ſweetiſh pulp.

The ſpecies is,

*Ceratonia Siliqua.*] Ceratonia with an upright, woody, thick ſtem, dividing into a branchy head fifteen or twenty feet high; long pinnated leaves, of ſeveral large, thick, firm, duſky green lobes; and ſmall purpliſh apetalous flowers, ſucceeded by large, fleſhy, compreſſed, ſweetiſh, eatable pods.

This ſhrub being a native of the ſouthern parts of Europe, in this country requires ſhelter in winter; ſo muſt be kept in pots, and placed in the green houſe collection.

It is propagated by ſeeds procured from Italy, which ſow in pots in the ſpring, plunging them in a hot-bed; and when the plants are three inches high, prick them in ſeparate ſmall pots, continuing them alſo in a hot-bed, and afford them occaſional ſhade, water, and freſh air, to which harden them gradually in June, and in July remove them abroad to a ſheltered place till October; then place them in the green-houſe, treating them as other ſhrubs of that department.

CERCIS, Judas tree, or *Seliquaſtrum.*

This genus furniſhes two hardy, deciduous, ornamental trees, of moderate ſtature, adorned with heart-ſhaped leaves, and cluſters of pentapetalous papilionaceous-like flowers.

Claſs and order, *Decandria Monogynia.*

*Characters.*] CALIX, a monophyllous quinquedented cup, convex at bottom. COROLLA, five petals, reſembling a papilionaceous flower; two of the petals are reflexed and form the wings, a roundiſh one the ſtandard, and three, in form of a heart, form the carina, and ſurround the fructification. STAMINA, ten diſtinct declinated filaments, four of them longer than the reſt, and oblong, incumbent antheræ. PISTILLUM, a narrow, lanceolate, pedicellated germen, ſlender ſtyle, and obtuſe ſtigma. PERICARPIUM, an oblong oblique-pointed pod of one cell, and roundiſh ſeeds.

The ſpecies are,

[1]CERCIS *Siliquaſtrum.*

*Siliquaſtrum, or Common European Judas-*

*tree.*] Cercis with an upright trunk, dividing into an irregular branching head, from ten to twenty feet high, garniſhed with round, heart-ſhaped, ſmooth leaves, on long foot-ſtalks, and purple flowers in large cluſters from every ſide of the branches, ſucceeded by long flat pods.

*Varieties.*] With fleſh-coloured flowers—with white flowers—with broad pods.

[2]CERCIS *Canadenſis.*

*Canadian Downy-leaved Judas-tree.*] Cercis with an upright ſtem, branching irregularly, from ten to fifteen feet high; heart-ſhaped, downy, alternate leaves; and reddiſh flowers in cluſters from the ſides of the branches, ſucceeded by long pods.

The flowers of both theſe ſpecies conſiſt each of five petals, are very numerous, and make a fine ornamental appearance in April or May, coming out with the leaves, ſurrounding the branches in cluſters, and are often ſucceeded here by pods and ripe ſeed.

All the ſorts are deciduous, and of hardy temperament.

They are choice furniture as flowering ſhrubs for any ornamental plantation; they are not only beautiful in their numerous early flowers, but the ſingularity of their leaves forms a fine variety, in aſſemblage with other trees and ſhrubs of ſimilar growth; ſo ſhould never be omitted in a collection, particularly for the moſt conſpicuous ſhrubbery compartments.

Their propagation is principally by ſeed; for they do not ſucceed by layers nor cuttings. Sow the ſeed in March in a bed of common earth, covering it half an inch deep; the plants will appear, probably ſome, the ſame year, and the reſt not till the following ſpring, ſo that the bed ſhould not be diſturbed till all are come up, being careful to clear out weeds, and give occaſional waterings in ſummer; and in winter the ſhelter of mats, in very ſevere weather, will greatly protect the tender tops of the ſeedlings, which in March following tranſplant in nurſery rows a foot apart, allowing two feet between the rows, and in about three years they will be of due ſize for the ſhrubbery.

CESTRUM, Baſtard Jaſmine, or *Jaſminoides.*

It retains ſome ſhrubby evergreen exotics for the ſtove ſix or eight feet high, adorned with ſimple, oblong, thick leaves, three or four inches long, and monopetalous funnel-ſhaped flowers in cluſters.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX, a monophyllous, ſhort, tubular, quinquedented cup. COROLLA, one funnel-ſhaped petal, with a long cylindrical tube, ſpreading above, and divided into five oval ſegments. STAMINA, five filaments adhering to the tube, and roundiſh tetragonous anthers. PISTILLUM, a cylindrical oval germen, ſlender ſtyle, and thick obtuſe ſtigma. PERICARPIUM, an oval unilocular berry, having many roundiſh ſeeds.

The ſpecies are,

[1]CESTRUM *Nocturnum.*

*Nocturnal, or Night-ſmelling Ceſtrum.*] Ceſtrum with an upright, woody, divided, branchy ſtem, ſix or eight feet high; longiſh, ſmooth, firm leaves, veined underneath, and placed alternate; and greeniſh yellow flowers in ſmall cluſters, on footſtalks, from the ſides of the branches.

[2]CESTRUM *Diurnum.*

*Diurnal, or Day-ſmelling Ceſtrum.*] Ceſtrum with an upright, woody, divided, very branchy ſtem, riſing eight or ten feet high; oblong, ſmooth, thick, firm leaves, placed alternate; and cluſters of whitiſh flowers, ſitting cloſe to the branches.

Both theſe ſpecies being natives of the hot parts of America, in this country are retained in ſtoves.

They are evergreen, and form a pretty variety in large ſtoves; both ſorts flower here annually, and have the appellation of Night-ſmelling, and Day-ſmelling, from the remarkable ſtrong fragrance of their flowers reſpectively at theſe times.

They muſt be kept in pots of light freſh earth, watered frequently in ſummer, but moderately in winter.

Both ſorts may be propagated by ſeed and cuttings, by the aſſiſtance of artificial heat; but as ſeeds are with difficulty procured, you may plant cuttings of the ſide-ſhoots five or ſix inches long, in pots of light earth, any time in ſummer, plunging the pots in the bark bed, and give occaſional ſhade and water.

CHAMÆROPS, Dwarf Palm, or *Palmetto.*

It conſiſts of one ſpecies, an acaulis perennial exotic, with large, palmated, fan-ſhaped leaves, and ſpathaceous flowers; a native of Spain, and retained here in our ſtoves for variety.

Claſs and order, *Polygamia Dioecia.*

*Characters.*] CALIX, male and hermaphrodite

phrodite flowers on diſtinct plants, having a compreſſed ſpatha, protruding a branching ſpadix of many florets, each having a triphyllous cup. COROLLA, a branching ſpadix of many erect florets, each divided into three inflexed parts STAMINA, ſix compreſſed filaments, and narrow twin antheræ. PISTILLUM, three roundiſh germina, and three permanent ſtyles, and acute ſtigmas. PERICARPIUM, three unilocular berries, each having a ſingle ſeed.

The ſpecies is,

CHAMÆROPS *Humilis.*]

*Dwarf Palm, or Palmetto.*] Chamærops with a ſpreading root, ſending up frondoſe ſpinous foot-ſtalks, elevating at top; large palmated folded leaves, from ten to eighteen inches long, and near a foot broad, of many foldings, opening like a fan, and divided at top like the fingers of a hand; and between the leaves ariſes a ſpatha, protruding a branching ſpadix of flowers.

This plant rather requires protection of a ſtove while young, but when older, it will proſper in the full air in ſummer, and in a green-houſe in winter, and muſt always be kept in pots of light ſandy earth, frequently watered in ſummer, but moderately in cold weather.

It may be propagated by ſeeds, and by ſlips from the head of the root. The ſeeds are procured from abroad, which ſow in pots of light ſandy earth, and plunge them in a hot-bed, giving occaſional waterings; and by autumn or ſpring following the plants will be fit to be pricked in ſeparate pots. By ſlips the crown of the roots ſometimes afford off-ſets, which, if ſeparated with fibres, planted in pots, and plunged in a hot-bed, will readily grow.

CHARACTERS. The deſcription or generical character of every genus of plants, drawn from the fructification, or all the parts of the flower.

The term *Character* is applied only in deſcribing the *genera*, and never extended to the *ſpecies*; that of the *genus* being always founded on the parts of the fructification, as being invariable; and the deſcription of the ſpecies of each genus, is from ſtriking circumſtances of the root, ſtem, leaves, buds, and mode of flowering, &c. all of which are often very different in different ſpecies of the ſame genus; but as the flower or fructification being unchangeable, that, and none other, is to be employed in eſtabliſhing the genus, and therefore the *characteriſtic* mark of each genus is to be fixed from the figure, ſituation, connection, number, and proportion of all the parts of the flower, as the *calix*, *corolla*, *ſtamina*, *piſtillum*, *pericarpium*, and the *ſemen*, or ſeed; which parts are defined to be the fructification of all vegetables, being a temporary but invariable part appropriated to generation, terminating the old vegetable, and furniſhing ſeed to begin the new; and which *characteriſtic* marks being conſtant throughout the ſpecies of every reſpective genus, and every genus invariable in itſelf, the flower is now univerſally eſtabliſhed as the only proper baſis from which to draw the Characters, to diſtinguiſh all the numerous genera of plants.

But before the invention of a regular ſyſtematic method, Characters were drawn from any, or all the parts of the plant indiſcriminately, as the root, ſtem, leaves, buds, and general habit; a circumſtance ſo variable and uncertain, as explains the great confuſion that ſo long obtained in botany; ſuch deſcriptions being only to diſtinguiſh the different *ſpecies* of a *genus*.

The Characters therefore of every genus are founded on the parts of the flower, which being deſtined for the reproduction of the plant and fruit, muſt neceſſarily be moſt conſtant; and all the ſpecies of every genus, however different in their external habit, which is often very conſiderable, yet they perfectly agree in their fructification: thus, for example, what apparent difference there is betwixt the cabbage, cauliflower, broccoli, and turnep! and yet are all ſpecies and varieties of the genus *Braſſica*, perfectly agreeing in their generical Characters. See GENUS and SPECIES.

CHEIRANTHUS, Wallflower, and Stock-Gilliflower.

The plants are of the flowery tribe, and conſiſt chiefly of herbaceous ſhrubby biennials, perennials, and annuals, of upright branchy growth, from one foot to a yard high, adorned with longiſh narrow leaves, and long erect ſpikes of numerous, four-petalous, very ornamental flowers.

Claſs and order, *Tetradynamia Siliquoſa.*

*Characters.*] CALIX, four ſpear-ſhaped, concave, erect, connivent leaves. COROLLA, four roundiſh petals, placed in form of a croſs. STAMINA, ſix parallel filaments, two rather ſhorter than the other, and erect acute antheræ. PISTILLUM, a long, priſmatic, te-

tragonous germen, the length of the ſtamina, exceeding ſhort ſtyle, and thickiſh, divided, reflexed, permanent ſtigma. PERICARPIUM, a long compreſſed ſiliqua, or pod, containing many compreſſed ſeeds.

There are many ſpecies; but thoſe of moſt merit are, thoſe celebrated beautiful plants, well known by the vague names of Wallflower and Stock-Gilliflower, ſo valuable as ornamental garden-plants, both for the elegance and delightful fragrance of their numerous flowers, and of which modern botaniſts allow but three diſtinct ſpecies; that is, two biennials, or ſometimes perennials, and an annual, each of which, however, admits of many fine varieties.

The Wallflowers are very diſtinguiſhable from the Stocks by their narrow, ſmooth, green leaves, thoſe of the Stocks being broader, thicker, and moſtly of a hoary whitiſh hue.

The ſpecies of our gardens are,

[1]CHEIRANTHUS *Cheiri.*

*Cheiri, Common Cheiranthus, or Wallflower.*] Cheiranthus with ligneous, long, tough roots; an upright, woody, abiding ſtalk, divided into many erect angular branches, forming a buſhy head from one to two feet high, cloſely garniſhed with ſpear-ſhaped, acute, ſmooth, green leaves, and all the branches terminating in long erect ſpikes of numerous flowers, which, in different varieties are Yellow, Bloody, White, &c.

Varieties of this are,

*Common Dwarf Yellow Wallflower*—having a low buſhy ſtem ten or twelve inches high, and ſmalliſh yellow ſingle and double flowers.

*Large Yellow Wallflower*—having a branchy ſtem eighteen inches or two feet high, and large yellow ſingle and double flowers.

*Large Yellow Bloody Wallflower*—having a branchy ſtem from about fifteen inches to two feet high, and yellow blood-ſpotted ſingle and double flowers.

*Bloody Wallflower*—having a branchy ſtem fifteen or eighteen inches high, and large blood-coloured ſingle and double flowers.—This variety, in its true bloody ſtate, is eſteemed the moſt beautiful of all the Wallflower tribe, and its flowers are the largeſt.

*White Wallflower*—having a very branchy greeniſh ſtem about a foot high, narrow ſhining green leaves, and pure white ſingle and double very fragrant flowers—with cream-coloured ſingle and double flowers.

This ſort being rather tender, ſhould have a dry ſoil and warm ſituation, where it will often flower, both in the ſpring, and in autumn and winter.

*Narrow-leafed Straw-coloured Wallflower*—having a buſhy ſtem a foot high, very narrow leaves, and long cloſe ſpikes of ſtraw-coloured ſingle and double almoſt ſcentleſs flowers.

*Variegated-leafed Yellow Wallflower*—having a branchy ſtem twelve or eighteen inches high, garniſhed with gold-ſtriped leaves, and yellow ſingle and double flowers—ſilver-ſtriped leaves, and yellow flowers.

*Winter Wallflower*—having a branchy ſtem a foot or fifteen inches high, and white or yellow ſingle flowers, appearing the beginning of winter, often continuing, if mild weather, till ſpring, when they exhibit a general bloom as the other varieties.

All the above varieties of this ſpecies (Wallflower) are robuſt, buſhy, evergreen, hardy biennials and perennials, very flowery plants, flowering principally in April, May, and June, often exhibiting their flowery ſpikes two or three feet high; the plants growing freely in any common ſoil and open expoſure, are great ornaments to the compartments of the pleaſure-ground. The Double are in moſt eſteem, and more particularly the Double Bloody ſort; but all the varieties effect a fine diverſity, and the Singles of each ſort afford plenty of ſeed for propagation, and from which both ſingle and double flowered plants are produced; and all the ſorts may alſo be encreaſed by ſlips, cuttings, and layers, in a ſhady border in May or June, which is the only method to continue the fine double kinds.

[2]CHEIRANTHUS *Incanus.*

*Hoary Cheiranthus, or Stock-Gilliflower.*] Cheiranthus with ligneous, long, naked, white roots; an upright, ſtrong, woody, abiding ſtem, from one to three feet high, branchy at top, adorned with long, ſpear-ſhaped, obtuſe, hoary leaves; and the top of the ſtalk, and all the branches, terminated by erect ſpikes of flowers, from one to two or three feet long, of different colours, in different varieties.

Varieties of this are,

*Red, or Queen Stock-Gilliflower*—having a robuſt ſtem a foot high, very branchy and buſhy at top, every branch terminated by an erect cloſe ſpike of pale red ſingle and double flowers—bright red ſingle and double flowers—variegated red and white ſingle and double flowers.—This ſort and varieties are remarkable for their prolification in many double-

flowered

flowered plants, from ſeed, and that, if ſown early in ſpring, it flowers a little the ſame year towards autumn, which is a peculiar merit in this ſort, becauſe the double flowers of the ſame year's ſeedlings, diſcovering themſelves at that time, we take them up with good balls to their roots, and pot them, to move to occaſional ſhelter from froſt, whereby they flower earlier, and much ſtronger in ſpring, than thoſe that are fully expoſed, eſpecially in ſevere winters, when the Stocks in general are ſometimes conſiderably cut.

*Scarlet, or Brompton Stock-Gilliflower*—having a ſtrong unbranching ſtem from one to three feet high, crowned by a cluſter of long thick leaves; and from the centre an erect flower-ſtalk two or three feet long, iſſuing forth ſeveral ſide-branches, all of which, and the main ſtalk, forming beautiful erect ſpikes of large ſcarlet ſingle and double flowers.

This in its double ſtate makes a moſt ſuperb appearance, and is the grandeſt of all the *Cheiranthus* kind, the flowers being often as large as ſmall roſes, numerous and cloſely placed, diſcloſing themſelves in ſucceſſive order upward, according as the ſpikes gradually advance in height, which, when at full length, frequently ſhow the plant upward of four feet high, exhibiting a full bloom five or ſix weeks.

*Purple, or Twickenham Stock-Gilliflower*—having a thick ſtem a foot and half, or two feet high, very branchy upward, and all the branches terminated by erect ſpikes of purple ſingle and double flowers——purple blood-ſpotted ſingle and double flowers—variegated purple and white flowers.

*White, or Shrubby Stock-Gilliflower*—having a ſhrubby firm ſtem, from a foot to a yard high, divided and ſubdivided into many ſhort branches, forming a buſhy ſhrub-like head, very ſhining green leaves, and all the branches terminated by erect ſpikes of pure white ſingle and double flowers—whitiſh fleſh-coloured flowers—whitiſh purple flowers—whitiſh red ſpotted flowers.—This ſort and varieties are remarkable for becoming ſhrubby, and of ſeveral years duration in a dry ſoil, and for affording many double-flowered plants from ſeeds.

All the above varieties of this ſpecies *(Cheiranthus Incanus)* are hardy, evergreen, very flowery, ornamental biennials and perennials, and grow freely in the open ground, and are great ornaments to the pleaſure-ground in May, June, and July, exhibiting their bloom from two to four feet high: the double kinds are ſingularly beautiful; but all the ſorts form a fine variety, and the ſingles produce plenty of ſeed in autumn, and from which both ſingle and double-flowered plants are annually produced.

[3]CHEIRANTHUS *Annuus.*

*Annual Stock-Gilliflower, or Ten-Weeks-Stock.*] Cheiranthus with an upright, woody, ſmooth ſtalk, divided into a branchy head, a foot or fifteen inches high, garniſhed with ſpear-ſhaped, blunt, a little indented, hoaryiſh leaves, and all the branches terminated by long erect ſpikes of numerous flowers, of different colours in different varieties.

Varieties of this are,

*Common Hoary-leafed Ten-Weeks-Stock*—having hoaryiſh leaves, and purple ſingle and double flowers—red ſingle and double flowers—white ſingle and double flowers.

*Pruſſian Wallflower-leafed Ten-Weeks-Stock*—having ſmooth, bright, green leaves, and pure white ſingle and double flowers—purple ſingle and double flowers.

All theſe varieties proſper in the full ground, and flower beautifully from July till autumn, and the ſingles afford abundance of ſeed, and from which both ſingle and double kinds are always produced; for being annual, they can only be continued by ſeed ſowed annually in ſpring.

[4]CHEIRANTHUS *Maritimus.*

*Maritime Dwarf Annual Cheiranthus, or Virginia Stock-Gilliflower.*] Cheiranthus with ſlender, herbaceous, very branchy, diffuſe ſtalks, ſix or eight inches high; ſmall, ſpear-ſhaped, cloſe-ſitting leaves; and all the branches terminating in ſhort looſe ſpikes of many ſmall, purple, ſingle flowers, having eminent antheræ.

The flowers of all theſe four ſpecies, and numerous varieties, are produced in erect ſpikes, from half a foot to a yard long, each ſpike having many flowers, eſpecially all thoſe of the firſt three ſpecies; and thoſe of the doubles are generally the moſt numerous, largeſt, more cloſely-placed, and of longeſt duration. The ſingle flowers are compoſed ſeparately of four broad petals, ſee their *Characters*; but in the doubles, the petals are multiplied in many ſeries to the very centre, to the total excluſion of the fructification, ſo conſequently afford no ſeed; the ſingles however afford plenty, and from which, plants of both ſorts are obtained. The double flowered kinds are very diſtinguiſhable at the firſt appearance of the flower-bud, which is more robuſt, larger, and ſwelling, than thoſe of the ſingles.

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The firſt and ſecond ſpecies, *Wallflower*, and *Stock-Gilliflower*, and all their reſpective varieties, may be conſidered both as biennials and perennials, with abiding ſtalks, garniſhed with leaves the year round, and very profuſe in moſt fragrant flowers. Conſidered as biennials, the plants being raiſed from ſeed in ſpring, attain nearly their full growth by autumn, ſtand the winter, and in ſpring following ſhoot up their flower-ſpikes which gradually advance in height, and the flowers continue opening till June, and which are ſucceeded by ripe ſeed in July, Auguſt, and September; ſoon after which the plants frequently periſh, eſpecially when growing in rich moiſt ground; or, if they ſurvive another year, they generally aſſume a dwindling growth, become ſtraggling and irregular, and flower weak and inconſiderably. As to their perennial property, being raiſed as above, and planted in a dry, rubbiſhy, gravelly, or any poor lean ſoil, they generally effect a ſtunted growth, become ſhrubby and perennial, of ſeveral years duration, and flower annually, as is evident by thoſe which grow naturally out of the crevices of walls, ruins, and old buildings, in many parts of England, particularly the Wallflowers; hence they derived the name; though the Stocks will alſo grow in the ſame manner, with ſhort, ſtunted, ſtocky ſtems; hence we ſuppoſe they obtained the appellation of ſtocked, or Stock-Gilliflower: however, when cultivated either in good or bad earth, and whether of two or more years duration, moſt of the ſorts, both Walls and Stocks, generally flower ſtrongeſt, and in greateſt beauty, the firſt year of flowering; therefore, to have a conſtant ſucceſſion of plants to flower in perfection, a ſupply muſt be annually raiſed from ſeed in April or May for next year's bloom, though the Wallflowers may be encreaſed by planting ſlips of their young ſhoots in May, which is the only method to propagate the double kinds; for the Walls are not very prolific in doubles from ſeed: the ſtocks may alſo be continued by ſlips, but theſe never ſucceed near ſo well as the Walls; beſides, the different varieties of Stocks are often very profuſe in double flowered ſeedlings, which renders the other practice unneceſſary; and the Queen Stock, White Stock, and the Twickenham Purple, frequently have one third, or half their ſeedlings double; but the White Stock moſt of all.

All the varieties of the above two ſpecies proſper freely in the open border, in any common ſoil and open expoſure, though, when growing in rich moiſt land, they, acquiring a luxuriance of growth, are more liable to injury, from the power of ſevere froſt, but more particularly the ſtocks; and in both ſpecies the double varieties are more liable to ſuffer than the ſingle kinds, ſo that ſome of the fineſt doubles ſhould always be potted, to move to occaſional ſhelter of a deep frame, to be covered with glaſſes or mats, in time of ſevere weather in winter, but muſt be fully expoſed in all mild weather.

The third ſpecies, *Ten-Weeks-Stock* and varieties, is but of one ſummer's duration, riſing from ſeed in ſpring, and periſh at the firſt attack of hard froſt in winter. All the varieties of this ſpecies are of hardy growth, and moſt beautiful annuals, very profuſe in moſt elegant ſpikes of flowers great part of ſummer and autumn, and the plants proſper in the open borders, and make a fine appearance, particularly the double kinds; and all the varieties are eaſily raiſed from ſeed in the common ground in ſpring, or may be forwarded in a hot bed, and, in either method, being planted out in the borders in May or June, they flower in July, and by two or three different ſowing, at a month or ſix weeks interval, from February to May, a ſucceſſion of full blowing plants may be obtained from July until December.

The fourth ſort, *Cheiranthus Maritimus*, is but of few months duration; it, however, conſidering its diminutive ſtature, is a very flowery plant, and proper to ſow in patches, to adorn the fronts of borders, which, by a repetition of three ſowings from February to May, will afford a ſucceſſion of bloom from June till October.

It is alſo ſome times ſowed to form a ſummer edging in ſmall gardens, which, during its bloom, is very pretty.

### *Propagation of the firſt two Species.*

The two firſt ſpecies, and all their reſpective varieties, are propagated plentifully from ſeed, in the common ground in ſpring, for tranſplantation; and from the ſeedlings both ſingle and double-flowered plants are obtained; but the Stocks are conſiderably more prolific in doubles than the Walls: however, when fine doubles of theſe are obtained from ſeed, &c. they may be multiplied at pleaſure by ſlips of their young ſide ſhoots early in ſummer; for all the ſorts of Wallflowers, both ſingle and double, grow freely by ſlips: but

But as to Stocks, although they will alſo grow by ſlips, they do not make near ſuch progreſs as the others, nor do they ever grow freely, nor make ſuch thriving plants; but this is no great loſs, ſince the ſeedlings ſeldom fail to afford great plenty of doubles.

Firſt, of raiſing both ſpecies from ſeed, obſerving that the plants raiſed one year flower the next.

The ſeed of all the varieties may be had cheap enough of all the nurſerymen; but the great article is to procure ſuch that have been ſaved from the fineſt of each reſpective variety. See *Saving the Seed.* The time for ſowing is as follows: the Wallflowers may be ſown any time in April; though in very rich ground, from about the 20th of that Month to the 15th of May is the moſt proper time to ſow both ſorts, for if ſowed ſooner in a rich warm ſoil, the plants are apt to acquire a too great luxuriancy of growth, and thereby ſubject to ſuffer by ſevere froſt and exceſſive wet in winter. For the reception of the ſeed chuſe a ſpot of undunged light earth, in a quite open ſituation, and, as ſoon as dug, ſow the ſeed on the ſurface, each ſort ſeparate, and rake it in light and evenly. The plants will riſe in a fortnight, when, if dry weather prevails, give frequent waterings, and in July, or when they are about three inches high, a quantity of the ſtouteſt ſhould be thinned out in a moiſt time, and planted ſingly in different parts of all the borders, and the other compartments of the pleaſure ground, where it is deſigned they ſhall flower, which all the ſorts will effect the following ſpring and ſummer. Or the Wallflowers may be pricked in nurſery-beds nine inches diſtance till October, then finally tranſplanted with balls to their roots; though where there is room in the borders at the time above-mentioned, it is moſt adviſeable to plant out moſt of theſe plants at once while young, where they are to remain, becauſe they do not ſucceed ſo well by removals, eſpecially the ſtocks, as having long ſticky roots, ill furniſhed with fibres; but the plants of both ſpecies, when removed large, unleſs with good balls, never take root ſo freely, nor eſtabliſh themſelves ſo firmly, nor are of ſo long duration, as when planted out finally at the period of growth firſt adviſed.

The Wallflowers however ſucceed much better by removals than the Stocks, their roots being more fibrey, and upon particular occaſions might even, when of pretty large growth, or when juſt ready to bloom, be removed where wanted with balls to their roots; but thoſe of the Stocks being ſo ſcanty of ſmall fibres, that the plants, when large, rarely riſe with good balls, without the greateſt care in digging wide and deeply round them.

Where the above two ſpecies are raiſed for ſale, as is greatly practiſed by the ſetting-gardeners in the vicinity of London, the plants from the ſeed bed are pricked or planted out in nurſery-beds, in rows nine inches or a foot diſtance, and the ſame diſtance in the lines; and if they here aſſume a luxuriancy of growth, they ſometimes tranſplant them again about the end of Auguſt into other beds, as above, eſpecially the Wallflowers, to check their luxuriancy, and promote their growing buſhy, to render them more marketable; for vaſt quantities of theſe plants are brought to Covent-Garden, and the other gardeners markets in London, in the ſpring of the year, for ſale, juſt as they begin to ſhew bloom, when the colours and properties of the flowers are diſcoverable, all brought with ſmall balls of earth to their roots, for they will not buy them without, and are there ſold, the ſingle kinds for a ſhilling or eighteen-pence per dozen, but the fine doubles are commonly brought in pots, and one plant of which often fetches as much, or more, than a dozen of the others.

If it is deſigned to cultivate any of theſe plants upon walls, ruins, or rock-work, for variety, it is moſt eligible to ſow the ſeed where the plants are to remain, ſowing it in the crevices in autumn or ſpring, covering it with any kind of dry earth a quarter of an inch deep, and leave it to nature, where the plants will come up, flower, and ſcatter their ſeeds, and propagate themſelves, and endure for years.

If ſeeds of any of the ſorts are ſown in any rubbiſhy or poor ſoil, and the plants thinned and permitted to remain unremoved, they are commonly of longer duration than thoſe that are tranſplanted.

When intended to ſhow a bloom of any of the double ſeedlings in pots, they may be potted with balls to their roots as ſoon as they ſhew their double flower-buds; but as the Stocks remove rather badly when large, and as they are conſiderably more prolific in doubles than the Walls, you may alſo, at the time of tranſplanting from the ſeed bed, plant ſome in large pots, three or four in a pot, and it is probable one or more in each pot may prove

doubles,

doubles, particularly the Queen, Purple, and White Stock; ſo that as ſoon as the doubles are diſcoverable, cut the others off cloſe to the bottom.

*Propagation by Slips.*

The propagation by ſlips or cuttings is practiſed principally for multiplying the fine double kinds, but chiefly for the Wallflowers, for the reaſons already hinted: the time of year for this work is April, May, and June, though they generally afford the beſt ſlips in May; theſe are the young ſide-ſhoots without flowers, three, four, or five inches long, which ſlip or cut off cloſe to the branches, diveſt them of the lower leaves, and plant them in a ſhady border ſix inches diſtance, and two, three, or four inches deep, according to their length, giving occaſional waterings in dry weather, where they will readily form roots, ſhoot at top, and make good plants by October, when the fine ſorts ſhould be each planted ſeparately in pots, to move to occaſional ſhelter of a frame during winter, covering them only in time of hard froſt, and they will all flower the ſpring following.

All the varieties may alſo be propagated by layers of their young pliable branches in May and June, as practiſed for carnations; but the raiſing them from ſlips is the more ready and expeditious method, and generally productive of the beſt plants.

To continue a ſtock of handſome ſtrong flowering plants of all theſe ſorts, always raiſe a ſupply annually both from ſeeds and ſlips, &c. for, although the plants ſometimes live two, three, or more years, they always exhibit the fineſt bloom the firſt ſeaſon of flowering.

All the double plants that are retained in pots ſhould be moved to a place of occaſional ſhelter in winter, either in a deep frame, or plunge them in a warm border, and arch them over with hoops; and in froſty weather, if in a frame, cover with the glaſſes, or, if under arches, with mats, and with long litter over either of theſe, when the froſt is very ſevere.

*Propagation of the third and fourth Species.*

The third ſpecies, *Ten-Weeks-Stock*, is propagated by ſeed for tranſplantation, any time from the middle of February to the middle or end of May; and by three different ſowings in that period of time, you will obtain plants, exhibiting a conſtant bloom from July till almoſt Chriſtmas.

The ſeed will grow freely on a warm border, eſpecially thoſe ſown after the middle of March; but to have the plants as forward as poſſible, I ſhould adviſe the firſt ſowing to be in a moderate hot-bed, or, in default thereof, in a frame, or under a hand-glaſs, for ſhelter on nights during the cold weather, ſowing it on the ſurface, and either rake it in lightly, or cover it with fine earth a quarter of an inch deep; and when the plants have ſeveral leaves, about two or three inches high, take the opportunity of moiſt weather to plant them out at once into the borders or places where you deſign they ſhall flower, giving a little water, and they will ſoon take root, and grow freely without farther trouble.

If you deſign to exhibit a blow of theſe plants by themſelves, plant them in four feet wide beds, in rows a foot aſunder, allowing the ſame diſtance in the rows.

When it is intended to have a ſhew of double kinds in pots, then either at the time of planting out, ſet three plants in each pot, and as ſoon as they ſhow bloom, it is probable one or more of the three will be double, when the others may be cut away, not pulled up, becauſe of diſturbing the roots of the remaining ones; or, if the plants are in beds, ſome of the doubles, as ſoon as diſcoverable, may be taken up with good balls, and plant one in each pot, give water, and place them in the ſhade a week or two.

The fourth ſort, *Dwarf Virginia Stock*, is raiſed from ſeed, ſown a quarter of an inch deep in the places where the plants are to remain, either in patches in the fronts of borders, or as an edging, as already obſerved.

*Saving Seed of all the Sorts.*

All the ſorts afford ſeed plentifully in their ſingle ſtate; the doubles none at all; and it ripens abundantly in June, July, and Auguſt.

In order to continue a ſucceſſion of the fineſt ſorts of the three firſt ſpecies and varieties, you ought to be choice in the plants from which to ſave ſeed: the largeſt plants therefore of each reſpective variety of ſingles, and with the largeſt flowers of the deepeſt or brighteſt colours, are to be marked; and where you diſcover any with flowers that exhibit a tendency towards a ſemi-double ſtate, theſe are alſo particularly to be choſen; that is to ſay, the ſingles having naturally but four petals, but ſometimes here and there one will ſport, and have five, ſix, or more, approaching to half doubles; and ſeeds ſaved from ſuch kinds, are always more prolific in double-flowered plants than that of the entire ſingle flowers: likewiſe good ſingle plants,

plants, growing close to, or very near doubles of the same kind, are also proper to mark for seed; and all bad kinds, particularly singles, growing near the chosen seed-plants, should be cleared away. By observing the above hints, you cannot fail of continuing an annual shew of these flowers in their greatest perfection.

According as the seeds ripen, cut off the branches in dry weather; tye them by the ends in small bunches, and hang them up in a dry but airy place, and when properly dried rub out the seed, and put it up in paper bags till spring.

CHELIDONIUM, Celandine, and *Glaucium*, or Horned-Poppy.

This genus furnishes hardy herbaceous perennials, biennials, and annuals, of the flowery tribe, obtaining from about eighteen inches to a yard in stature, ornamented with large divided leaves, and large, four-petalous, yellow and scarlet flowers.

Class and order, *Polyandria Monogynia.*

*Characters.*] CALIX, two oval, concave, caduous leaves. COROLLA, four large, roundish, plane, spreading petals. STAMINA, numerous filaments, and oblong, compressed, twin antheræ. PISTILLUM, a cylindrical germen, no style, but a headed bifid stigma. PERICARPIUM, a cylindrical bivalvular pod, having many seeds.

The species of note are,

[1]CHELIDONIUM *Majus.*

*Greater Common Perennial Celandine.*] Chelidonium with a thick knobby root; upright, round, branching, hairy stalks, two or three feet high; large, many-lobed leaves; and at top of the stems and branches umbellated foot-stalks, supporting large yellow flowers.

*Varieties.*] Greater Celandine with jagged leaves, and double yellow flowers——with striped jagged leaves.

[2]CHELIDONIUM *Glaucium.*

*Glaucium, or Biennial Chaledonium, called Horned-Poppy.*] Chelidonium with upright, robust, round, smooth stalks, divided into many branches two feet high; pinnatifid lower leaves, those above lobated, and their base embrace the stalks; and from the axillas of the leaves, single foot-stalks, supporting each one large yellow flower, succeeded by long horn-shaped pods nine or ten inches in length.——Hence the appellation Horned-Poppy.

It flowers in June and July, and ripens abundance of seeds, and being a biennial, dies soon after.

[3]CHELIDONIUM *Corniculatum.*

*Corniculated Annual Chelidonium, or Scarlet Horned-Poppy.*] Chelidonium with upright rough stalks half a yard high; large, pinnatifid, finely-jagged, many-pointed, hairy, close-sitting leaves; and scarlet flowers of short duration, succeeded by long corniculated, or horn-shaped, pods.

The flowers of all these species in their natural state are composed of four large, roundish, spreading petals; but in the double kind the petals are numerous.

They are all very hardy plants, and prosper in any common soil.

The first species grows wild in shady lanes, sides of banks, and such-like uncultivated places; is valuable in medicine, but in its common state is rarely admitted into gardens. The double-flowered variety, however, merits culture as a flowery perennial for large borders, and may be multiplied abundantly by dividing the roots in autumn or spring.

The second sort, *Chelidonium Glaucium*, merits notice both as a flowery biennial, and for the singularity of its long horned pods; it inhabits the sea coasts, but has been long admitted in gardens, and grows freely in the borders, or in rock-work, &c. It is propagated plentifully by seed in autumn or spring, sowed either where the plants are to remain, or for transplantation; they come up one year, flower the next, and soon after perish; so must be raised annually from seed.

The third sort will form a variety in the borders among other hardy annuals, and should be sowed in February or March a quarter of an inch deep, in patches where they are to remain.

CHELONE, *Chelone.*

It consists of three herbaceous flowery perennials, with upright stalks two feet high, decorated with spear-shaped leaves, and beautiful spikes of monopetalous, ringent, different-coloured flowers, in autumn.

Class and order, *Didynamia Angiospermia.*

*Characters.*] CALIX, a monophyllous, quinquepart, permanent cup. COROLLA is monopetalous and ringent, with a short tube, swelling at the mouth, the upper lip obtuse and indented, the under one slightly trifid. STAMINA, two long and two short filaments, inclosed in the back of the corolla, and incumbent antheræ. PISTILLUM, an oval germen, slender style, and blunt stigma. PERICARPIUM, an oval bilocular capsule, and numerous, roundish, bordered seeds.

The ſpecies are,

[1]CHELONE *Glabra.*

*Smooth Acadian Chelone.*] Chelone with thick very creeping roots; many upright, ſmooth, channelled ſtalks, two feet high, garniſhed with ſpear-ſhaped, pointed, ſerrated, cloſe-ſitting leaves, in pairs oppoſite; and all the ſtalks terminated by cloſe ſpikes of flowers, of different colours, in different varieties.

*Varieties.*] Smooth Chelone with white flowers——with roſe-coloured flowers—with red flowers—with purple flowers.

[2]CHELONE *Hirſuta.*

*Hairy Virginian Chelone.*] Chelone with ſpreading roots; upright very hairy ſtalks two feet high, garniſhed with ſpear ſhaped, hairy, oppoſite leaves; and all the ſtalks terminated by ſpikes of flowers, of different colours, in different varieties.

*Varieties.*] Hairy Chelone with white flowers—with blue flowers—with red flowers—with purple flowers.

[3]CHELONE *Penſtemon.*

*Penſtemon, and the Aſarina Erecta of Miller.*] Chelone with upright branchy ſtalks a foot and half high, adorned with ſpear-ſhaped, pointed, oppoſite leaves, their baſe embracing the ſtalk, and ſhort looſe ſpikes of purple flowers from the forks of the branches.

The flowers of all theſe ſpecies and varieties are of the ringent or gaping kind, many upon each ſpike, which in all the varieties appear from September till November, and are ſometimes ſucceeded by ripe ſeeds in England.

They are all very hardy, and grow freely in the open ground, in any ſoil and expoſure.

They are choice furniture for the pleaſure-ground, particularly the two firſt ſorts and varieties, their flowers exhibiting a very ornamental appearance for two months in autumn, after the principal bloom of moſt other flowers are paſt; and being of different colours, they form a fine variety with each other, and the plants may be readily encreaſed at pleaſure, to furniſh all the different compartments abundantly.

The propagation of the two firſt ſorts, and all the varieties, is by roots, which multiply exceedingly, and may be parted in autumn, or early in ſpring.

The third ſort being rather biennial, muſt be raiſed annually from ſeed, which, if ſown in autumn as ſoon as ripe, the plants will readily riſe the following ſpring, and in June or July may be planted out in the borders.

CHENOPODIUM, Gooſe-foot, or Wild Orach.

This genus retains hardy herbaceous plants for culinary and ornamental uſes, and ſhrubby evergreens for the green-houſe.

Claſs and order, *Pentandria Digynia.*

*Characters.*] CALIX, five oval, concave, permanent leaves. COROLLA, no petals. STAMINA, five filaments, and roundiſh didymous antheræ. PISTILLUM, an orbiculate germen, ſhort, two-parted ſtyle, and blunt ſtigmas. PERICARPIUM, none; a ſingle ſeed lodged in the calix.

The ſpecies are,

[1]CHENOPODIUM *Bonus-Henricus.*

*Good-Henry, All-Good, or Common Engliſh Mercury.*] Chenopodium with large, triangular, arrow-pointed, entire leaves, from the root; upright, thick, ſtriated ſtalks, garniſhed with triangular leaves, and terminated by cloſe ſpikes of apetalous yellowiſh-green flowers in June and July, ſucceeded by ripe ſeeds in Auguſt.

It grows wild by way ſides and in bye-lanes, but is ſometimes cultivated in gardens as an eſculent herb, to uſe for culinary purpoſes like ſpinach.

The three following are hardy ornamental annuals.

[2]CHENOPODIUM *Scoparia.*

*Belvedere, or Annual Mock Cypreſs.*] Chenopodium with upright ſtalks, cloſely branching pyramidally from the bottom upward, forming a regular pyramid two or three feet high, fully garniſhed with very narrow, ſpear-ſhaped, plane, entire leaves, and ſpikes of ſmall greeniſh flowers.

The merit of this annual is in its beautiful pyramidal growth, reſembling a young cypreſs tree, and is very ornamental; flowers in July, and ripens abundance of ſeed in autumn.

[3]CHENOPODIUM *Botrys.*

*Botrys, or Multifid-ſpiked Annual Chenopodium, called Oak of Jeruſalem.*] Chenopodium with upright branchy ſtalks near a foot high, garniſhed with oblong, ſinnuated, oak ſhaped, fragrant leaves, and multifid naked ſpikes.

[4]CHENOPODIUM *Ambroſioides.*

*Ambroſia-ſcented Annual Chenopodium, called Oak of Cappadocia.*] Chenopodium with upright ſtalks two feet high; ſpear-ſhaped, indented, odoriferous leaves; and ſingle leafy ſpikes.

Theſe laſt two annuals are eſteemed principally for the fragrance of their leaves; they flower in July and Auguſt, ſucceeded by ripe ſeeds in September.

The

The two following are ſhrubby perennials of the green-houſe.

[5]CHENOPODIUM *Fruticoſum.*

*Shrubby Mexican Chenopodium.*] Chenopodium with ſhrubby, durable, branchy ſtalks, four or five feet high; ſpear-ſhaped, indented, fragrant leaves.

[6]CHENOPODIUM *Multifidum.*

*Shrubby Multifid Chenopodium of Bonaria*] Chenopodium with ſhrubby durable ſtalks three or four feet high; multifid, or divided leaves, of many narrow ſegments.

The flowers of all theſe ſpecies are apetalous, i e. not adorned with petals, ſo make no ornamental appearance.

The firſt ſpecies, *Good-Henry*, when intended to cultivate it as an eſculent, ſow it annually in Auguſt, or early in ſpring, in an open ſpot, and rake it in, and thin the plants to ten or twelve inches diſtance.

The *Belvedere*, and the other two annual ſpecies, are raiſed from ſeed in the full ground in March, ſowing it on a bed of rich light earth, and rake it in lightly; and when the plants are two or three inches high, plant them out ſingly in different parts of the borders; or the ſeed may be ſown half an inch deep, in patches where the plants are to flower, thinning them to a ſingle plant in each place. Some of the *Belvedere* plants may alſo be potted, in which they have a fine effect, in aſſemblage with other potted annuals, in adorning any particular compartment.

The ſcattered or ſelf-ſown ſeeds of the *Belvedere*, in autumn, frequently grow, and the plants riſe ſtrong in the ſpring.

The two ſhrubby green-houſe ſpecies, are eaſily propagated by ſlips or cuttings of their branches, planted in pots of light mould any time from March till June, which, if plunged in a moderate heat, it will greatly forward them.

CHIONANTHUS, Snow-Drop-tree, or Fringe-tree.

This genus conſiſts of one deciduous flowering ſhrub, adorned with large ſimple leaves, and cluſters of ſnow-white fringed flowers.

Claſs and order, *Diandria Monogynia.*

*Characters.*] CALIX, monophyllous, erect, four-parted, and permanent. COROLLA, a funnel-ſhaped petal, divided at top into four long, narrow, erect ſegments. STAMINA, two ſhort filaments inſerted in the tube of the corolla, and heart-ſhaped antheræ. PISTILLUM, an oval germen, one ſtyle, and blunt trifid ſtigma. PERICARPIUM, an unilocular berry, including one hard ſeed.

The ſpecies is,

CHIONANTHUS *Virginica.*

*Virginia Snow-Drop-tree.*] Chionanthus with an upright rough ſtem, dividing into a moderately branchy head eight or ten feet high, garniſhed with large laurel-ſhaped leaves, and from every part of the branches long bunches of very white flowers on trifid foot-ſtalks.

This is a moſt beautiful ſhrub for the ornamental plantations of the pleaſure-ground, and will proſper in any common ſoil, though it delights moſt in that of a ſomewhat moiſt loamy nature. Let it however be placed conſpicuouſly, and if ſo as to have the ſhelter of other ſhrubs, there will be the greater chance of its exhibiting a more plentiful bloom.

The propagation of this ſhrub is by ſeed, and layers of its young branches; though by this method they emit roots very ſparingly, and rarely in leſs than two years.

The ſeed is procured from America by the ſeedſmen, which rarely grows the firſt year. Let it however, as ſoon as it arrives, be ſown in large pots of freſh loamy earth half an inch deep, and plunge them in a ſhady border, giving occaſional weeding and watering till October; then move them to a frame, or where they can be occaſionally ſheltered during hard froſt in winter; and if in March you plunge them in a hot-bed, it will bring them up freely; which harden gradually to the full air, and give occaſional ſhade from the mid-day ſun at their firſt appearance, and water during ſummer, and ſhelter of a frame again from October to April, when the ſeedlings may be pricked ſeparately in ſmall pots, obſerving the above care for another year or two, then may tranſplant them into the full ground.

By layers, chuſe the young twigs of laſt ſummer, and, as they emit roots reluctantly, it is eligible to give ſome a flit, others a twiſt, at the part to be laid in the earth; give plenty of water during ſummer, and in two years it is probable ſome will be rooted.

CHRYSANTHEMUM, Corn Marigold, *(Chryſanthemum).*

The plants are moſtly herbaceous, and furniſh ſome beautiful flowery annuals and perennials for the pleaſure-ground, and ſome of ſhrubby growth for the green-houſe; all of which are upright, very branchy, and from two to four feet high, adorned moſtly with finely divided leaves, and compound, radiated, white and yellow flowers.

Claſs and order, *Syngeneſia Polygamia Superflua.*

*Characters.*] CALIX, a compound radiated flower, having a hemiſpherical, imbricated cup. COROLLA, many hermaphrodite and female florets; the former are ſmall, funnel-ſhaped, five-parted at top, and form the diſk; and the females are oblong, ligulated, triparted at the end, and compoſe the circumference or ray. STAMINA, five ſhort filaments, and tubular antheræ. PISTILLUM, an oval germen, ſimple ſtyle, and two obtuſe ſtigma. PERICARPIUM, none. SEMINA, a naked ſingle ſeed to each floret.

There are near twenty ſpecies; but as the greater part are of no merit in gardening, and ſome are common weeds of our fields, ſuch as the Common Corn Marigold, and greater Wild Daiſy, &c. we ſhall omit them here, and only introduce thoſe that have merit as garden plants.

The firſt following is that elegant hardy annual, diſtinctively called *Chryſanthemum.*

[1]CHRYSANTHEMUM *Coronarium.*

*Coronated Annual Chryſanthemum.*] Chryſanthemum with a ſingle upright ſtalk from the root, divided into numerous erect branches a yard or more high, garniſhed with pinnatifid deeply-cut leaves, having the exterior ſegments broadeſt, and all the branches and ſide-ſhoots crowned by elegant compound flowers, of different colours and properties, in different varieties.

*Varieties of this are*] Coronated Chryſanthemum with white ſingle and double flowers —cream-coloured ſingle and double flowers— yellow ſingle and double flowers—yellow and white ſingle and double flowers—brimſtone-coloured ſingle and double flowers—fiſtular, or quilled flowers, having all the florets hollow like a quill or pipe—with finely jagged leaves, and flowers of all the above colours and properties.

The flowers of all theſe varieties, in their natural ſingle ſtate, exhibit a round open diſk or middle, compoſed of numerous, ſmall, tubular florets, and one or two ſeries of long flat florets form the circumference or radius; but in the double flowers, the middle or diſc is generally filled with the radius, and ſome are rendered as completely double as the fineſt ranunculus, and the impletion is remarkably regular and beautiful; but it is obſervable, that the firſt flowers are never ſo full and double as thoſe which ſucceed them on the ſame plant.

All the varieties begin flowering in July; the flowers are exceeding numerous, and exhibit a conſtant ſucceſſion of full-bloom till November, and both ſingle and double are ſucceeded by abundance of ſeed.

The three next following are hardy perennials.

[2]CHRYSANTHEMUM *Seretinum.*

*American Daiſy-flowered Chryſanthemum.*] Chryſanthemum with a very creeping root; upright ſtrong ſtalks a yard high, divided upward into branches; broad lower leaves ſawed on the edges, thoſe above ſpear-ſhaped, ſerrated, and pointed; and each branch crowned by a large white flower.

*Varieties.*] With double flowers——with deeply jagged leaves.

[3]CHRYSANTHEMUM *Monſpelienſe.*

*Montpelier Daiſy-flowered Chryſanthemum.*] Chryſanthemum with upright branchy ſtalks three or four feet high; palmated lower leaves of many pennatifid lobes, thoſe above finely divided; and all the branches terminated by large, white, radiated flowers, on long foot-ſtalks.

[4]CHRYSANTHEMUM *Corymbiferum.*

*Corymbus-flowering Chryſanthemum*] Chryſanthemum with upright ſtalks half a yard high; winged leaves, the lobes cut and ſerrated; and the ſtalks terminated by large white flowers in a ſort of corymbus.

The flowers of the laſt three ſpecies are ſhaped like the wild white daiſy, but much larger, having large yellow diſcs, and white radii or rays, appearing in ſucceſſion from July till September.

The two following are ſhrubby green-houſe plants.

[5]CHRYSANTHEMUM *Fruteſcens.*

*Shrubby Canary Chryſanthemum.*] Chryſanthemum with a ſhrubby ſtalk, divided into a branchy head, two feet high, adorned with narrow, thick, ſucculent, indented leaves, three-parted at the ends; and ſmall white flowers, growing ſingly on naked foot-ſtalks from the axilla of the leaves, appearing at moſt times of the year.

[6]CHRYSANTHEMUM *Floſculoſum.*

*Shrubby Floſcular Chryſanthemum.*] Chryſanthemum with a ſhrubby ſtalk, divided upward into a branchy head two feet high; oblong, indented, cloſe-ſitting leaves; and from the axilla of the leaves globular deep yellow flowers, having no rays, but compoſed wholly of floſcular or hollow hermaphrodite florets, appearing from June till November.

The firſt ſpecies, *Chryſanthemum Coronarium,* is a valuable annual for the common borders, and

and other quarters of the pleaſure-ground, being grandly ornamental in a great profuſion of flowers from July till the approach of winter; and each variety is remarkably prolific in doubles, with this peculiar property, that, although the flowers at their firſt appearance often exhibit themſelves ſcarcely ſemi-double, the ſucceeding ones on the ſame plants improve more and more double to the very laſt. This ſort is commonly deemed an annual, as, riſing from ſeed in ſpring, producing flowers and ſeed the ſame year, and periſhing at the firſt attack of froſt; yet cuttings of its branches potted in autumn, to move to ſhelter in winter, take root, and continue till next year, and flower earlier by a month than the ſeedlings. See their *Propagation*.

The ſecond, third, and fourth ſorts, are hardy, herbaceous, flowery perennials, proper for the compartments of large pleaſure-grounds; they will encreaſe the variety by an autumnal bloom of two or three months duration, and will grow any where.

The two ſhrubby ſorts require ſhelter in winter, and, being ornamental, are proper for the green-houſe collection, ſo muſt be always retained in pots of good earth, and managed as other ſhrubby exotics of the green-houſe.

*Propagation of all the Sorts.*

Firſt, of the annual ſort, *Chryſanthemum Coronarium*.

This annual and varieties are raiſed abundantly from ſeed, either in a hot bed or warm border, in the ſpring, for tranſplanting; alſo by cuttings and ſlips of their branches in autumn.

By ſeed, it may be ſown in March or April, and to bring the plants as forward into flower as poſſible, it ſhould be ſown in a moderate hot-bed with other annuals of ſimilar quality, ſuch as the African Marigold, &c. See ANNUAL PLANTS. Or, in default of that convenience, ſow it in a warm border under a hand-glaſs; though, if ſown in a warm place in the middle of April, the plants will riſe without any covering, but they will be later in flowering than thoſe forwarded as above. In either method ſow it moderately thin, either in ſmall drills two inches aſunder, covering it the third of an inch deep, or ſcatter it on the ſurface, and cover it that depth: the plants will riſe in a fortnight or leſs, giving occaſional waterings, and about the middle or latter end of May, or when the plants are about five or ſix inches high, take advantage of ſhowery weather, and plant them out ſingly in the different parts of the borders or fronts of ſhrubberies, in the places where they are to flower, at ſix, eight, or ten feet diſtance, and, if dry weather ſucceed, give a few waterings the firſt week or fortnight.

If you are curious to cultivate only the fine doubles, you may, at the time of planting out, ſet two or three plants together, in patches the above diſtance, and when they ſhew flower, to determine the ſorts, may clear away the worſt, leaving only one of the beſt doubles in each patch.

When deſigned to have a ſhew of the fineſt doubles in pots, they may be tranſplanted therein as ſoon as they are diſcoverable by their bloom, for they will readily tranſplant with balls.

By cuttings or ſlips. This is practiſed only for the propagation of the fine doubles for an early bloom the following ſummer, and the beſt time to perform it is September, or early in October. Cut or ſlip off a quantity of the robuſt ſide-ſhoots, from three to ſix inches long, without flowers; diveſt them of the lower leaves, and plant many of them together in large pots within an inch or two of their tops, and two or three inches apart; give ſome water, and place them in the ſhade during the hot weather, and by the end of October they will be rooted, when remove the pots either into a green-houſe or garden-frame for the winter, but the latter is the moſt eligible, where they may enjoy the full air in mild weather, and have occaſional ſhelter from froſt; and in April tranſplant them ſingly into the borders, and ſome in pots, to move occaſionally to ornament any particular compartment.

The plants thus raiſed will flower a month or ſix weeks ſooner the ſucceeding ſummer, than thoſe raiſed in the ſpring from ſeed.

It is however proper always to raiſe a quantity of ſeedlings annually, as before directed, ſo propagating by cuttings from the beſt doubles of theſe every autumn, for an early bloom the following ſummer, becauſe, by continuing to propagate by cuttings always from the ſame plants, the flowers would degenerate ſmall, leſs numerous, and at laſt becomes barren.

To ſave ſeed from theſe varieties, let it always be from the fulleſt doubles, which, as well as the ſingles, ripen it abundantly in September.

*Propagation of the Perennials.*

The three hardy perennial ſpecies, which are the ſecond, third, and fourth ſorts, may be propagated plentifully, by dividing their roots any time in open weather from October to March. They may likewiſe be raiſed by ſeed ſown in a bed of common earth in March, and raked in lightly; the plants will come up in April or May, and in June or July prick them a foot diſtance in a nurſery-bed to remain till October, then tranſplant them into the borders.

*Propagation of the Shrubby Sorts.*

The two ſhrubby ſorts are eaſily propagated by cuttings planted in pots of rich earth any time from April till July, giving occaſional ſhade and water, and by September will be rooted and fit to tranſplant in ſeparate pots.

CHRYSOCOMA, Goldy-locks, or *Coma Aurea.*

This genus retains herbaceous flowery perennials for the borders, and ſhrubby ornamental plants for the green-houſe, all of erect growth, from one to two feet high, ornamented with narrow leaves, and compound floſcular flowers.

Claſs and order, *Sygeneſia Polygamia Æqualis.*

*Characters.*] CALIX, a compound flower in an imbricated cup of many narrow ſharp-pointed ſcales. COROLLA, compoſed of many floſcular, hermaphrodite, funnel-ſhaped florets, five-parted at the brim. STAMINA, five filaments, and cylindrical antheræ. PISTILLUM, an oblong germen, ſlender ſtyle, and two depreſſed ſtigmas. PERICARPIUM, none. SEMINA, a ſingle ſeed, crowned with down, to each floret.

The firſt ſpecies is an herbaceous, fibrous-rooted, very-flowery perennial.

[1]CHRYSOCOMA *Linoſyris.*

*Linoſyris, or German Goldy-locks.*] Chryſocoma with upright, round, robuſt, annual ſtalks, a foot and half high, garniſhed with many long, narrow, ſmooth leaves, and the upper parts dividing into many foot-ſtalks, each ſupporting a head of bright yellow flowers, the whole forming a ſort of umbel, appearing in July, and ripen ſeeds in autumn.

The two following are dwarf ſhrubs of the green-houſe.

[2]CHRYSOCOMA, *Coma Aurea.*

*Shrubby Coma Aurea, or Greater African Goldy-locks.*] Chryſocoma with a ſhrubby ſtem, divided into a ſlender branchy head two feet high, garniſhed with numerous, narrow, running leaves, each having a leafy appendage detached from the back part along the ſtalk, and pale yellow flowers on ſlender naked foot-ſtalks from the ends of the branches, all ſummer and autumn.

[3]CHRYSOCOMA *Cernua.*

*Shrubby Nodding Goldy-locks.*] Chryſocoma with a ſhrubby ſtalk, divided into a branchy head, a foot and half high, garniſhed with ſhort, narrow, hairy leaves, and pale yellow flowers, nodding on one ſide, appearing from the beginning of ſummer till autumn.

The firſt ſpecies, *German Goldy-locks*, flowers very ornamentally about ſix weeks, and ſucceeds in any of the compartments of the pleaſure-ground; its propagation is by dividing the roots any time in open weather from September till March, or it may be raiſed from ſeed in a bed of light earth in March or April.

The two ſhrubby ſorts muſt be kept in pots, and placed in a green-houſe in winter.

They are eaſily propagated by cuttings, in pots of light rich earth in ſpring or ſummer, which, if plunged in a little heat, or cloſely covered with a hand-glaſs about a month, they will readily grow.

CICHORIUM, Succory, or Endive, *(Endivia.)*

This genus furniſhes but one uſeful ſpecies, an herbaceous eſculent of the kitchen-garden, valuable both as a ſallad and a culinary herb, of which there are three eminent varieties.

Claſs and order, *Syngeneſia Polygamia Æqualis.*

*Characters.*] CALIX, a compound flower, having a calyculated, imbricated, permanent, general cup. COROLLA, many hermaphrodite, plane, tongue-ſhaped, five-parted florets, placed in a circle. STAMINA, five filaments, and cylindric, pentagonous antheræ. PISTILLUM, an oblong germen, ſlender ſtyle, and two revolute ſtigma. PERICARPIUM, none. SEMINA, a ſingle ſeed to each floret, lodged in the calix.

There are three ſpecies in the whole; the Wild Succory of the fields—the Prickly Succory of Sicily—and the cultivated Succory or Endive of our gardens; but the two former have no merit as garden-plants.

The Succory of our gardens is,

CICHORIUM *Endivia.*

*Endive, or Garden Succory.*] Cichorium with a ſpindle-ſhaped fibrey root, crowned by a compact cluſter of numerous, oblong, ſpread-

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ing leaves, close to the ground, from about six to ten or twelve inches long, near half as broad, in some sorts fringed and curled, others plane and entire, and in the centre an upright branchy seed-stalk a yard high, garnished with small leaves, and solitary blue flowers, succeeded by plenty of seed.

Varieties are,

*Green Curled Endive*——hath numerous, green, finely fringed, and curled leaves, forming a circular cluster close to the ground twelve or fifteen inches diameter; the centre leaves many, very closely placed, and grow to a large, compact, finely-blanched, white heart. This is considerably the finest variety of Endive for general culture, both for sallads and culinary purposes, and is the hardiest to stand the winter. But the great article is, to have the true sort; for some have long, irregular, thinly-placed leaves, very little curled, and the heart open and loose; therefore, in saving seed, be particular in marking the fullest-leaved, most curly, regular, bushy plants, that bottom well, and have the heart perfectly full, close, and white.

*White Curled Endive*——hath numerous, white, very fringy, curled leaves, in a circular cluster close to the ground, ten or twelve inches diameter, very full and close in the heart.

*Broad-leafed Batavia Endive*—hath long, broad, plane, entire leaves, of a whitish-green colour, thick and crisp like cos-lettuce; but is more proper for culinary uses than sallads, nor is it so hardy to stand the winter as the former varieties; so should be cultivated only for autumn service, i. e. to use in August, September, October, and November.

All the varieties may be considered both as annuals and biennials. Considered as annuals, that if sown early in spring, or even any time before the beginning of June, the plants very commonly fly up to seed the same summer, in their minor, or half-grown state, and perish in autumn. As biennials, that if sown in June or July, the plants acquire perfection in autumn, continue till the spring following, then shoot up stalks for flower and seed, and soon after perish; so, at most, they are never more than biennial.

It is the inner leaves of all the varieties that are the useful parts, which, when blanched white, to render them crisp and tender, and to reduce them from a naturally strong, to an agreeable bitter taste, are then fit for use.

They are valued chiefly as principal furniture for autumn and winter sallads, and for some culinary uses; and their principal season of perfection is, from the latter end of August until Christmas, or longer, according to the temperature of the season; though the curled kinds generally resists the frost of our ordinary winters, and remain in tolerable perfection till March or April.

*Propagation and Culture.*

The propagation of each variety is by seed annually in an open spot of ground, from which the plants are to be transplanted a foot distance, in open beds or borders, to remain to grow to full size, when their leaves are to be tied together, to promote their blanching white.

The principal season for sowing these seeds is from the beginning of June to the end of July; and to have a regular supply of plants, it is proper to perform three different sowings at about three weeks or a month's interval, observing, that if sown before the first week in June, the plants are apt to run to seed the same year without acquiring perfection; and, if sown later than July, they have not time enough to grow to any tolerable size before the approach of winter: however, where the plants are required as early as possible, you may perform an earlier sowing, but the earliest should never be before the middle of May, and even that sowing is apt to fly up soon to seed, so must never depend on this sowing for a main crop; therefore, for the general autumn, winter, and spring crops, I advise the first sowing to be in the first week in June, the next in the last week in the same month, and the third and last about the fifteenth or twentieth of July; and each of these sowings will afford two or three different drawings or transplantings; for it is eligible to make five or six plantations at least, at different intervals, whereby a regular succession of good Endive will be obtained from August until April.

All the sowings should be performed in an open exposure, and the richer the ground the better, which, after being dug, form into a bed or beds four feet wide; directly sow the seed by broad-cast moderately thin, and tread and rake it in with a large rake.

The plants will come up in ten or twelve days, when, if the weather is dry, give occasional waterings; keep them clean from weeds, and where they rise in clusters, thin them

them to two inches diſtance, that they may not draw each other weak, and, when about a month old, tranſplant the largeſt in the following manner.

When the plants of each ſowing are from three to four or five inches high, they are then of a proper ſize for planting out, which ſhould be at once in the place where they are finally to remain; they ſhould be allowed a ſpot of as rich ground as you can afford, and an open expoſure is moſt eligible for the main crops that are planted out in June, July, and Auguſt; but for thoſe intended principally for ſpring ſervice, which are planted out in September, ſhould be ſet near the ſhelter of a South wall or hedge. At each time of planting chuſe moiſt weather, if poſſible, and let the ground be then neatly dug one ſpade deep; divide it into four feet wide beds, and rake the ſurface ſmooth; then draw out a quantity of the ſtouteſt plants from the ſeed-bed, with their roots as entire as you can, and if the plants have run up with long leaves, trim their ſtraggling tops all of equal length, then plant them by line and dibble four rows in each bed, and a foot diſtance in the rows; and that the plants may have the more room to ſpread, ſet them in the quincunx order, (ſee QUINCUNX) finiſhing the work with a good watering, unleſs the weather is very ſhowery, when you may ſpare yourſelf that trouble, though, at any rate, a little water at planting ſettles the earth cloſe to their roots, and is of much advantage; and if the weather is dry, the waterings ſhould be repeated every other day for a week, or till the plants have taken root.

In this manner it is adviſeable to make a freſh plantation every fortnight, from June to the middle of September, by which practice you will obtain a regular ſucceſſion of Endive in due perfection from Auguſt till the following ſpring, proper either for family ſervice, or for market.

When there is a neceſſity of planting any out in very dry weather, it is proper to draw flat ſhallow drills a foot diſtance; ſo ſet the plants therein a foot aſunder, that when water is given, the drills will detain it about the plants, and the earth will retain a moiſtneſs longer than the level ground.

As to the general culture of the different crops, keep each plantation clean from weeds, by hoeing between the plants careſully in dry weather; and when the plants are nearly full grown, a quantity of the largeſt ſhould have their leaves tied up for blanching, which is to be repeated in ſucceſſive order, and the following is the directions.

*Method of Blanching the Plants.*

The great excellence in good Endive is to have the inner parts of the plants finely whitened or blanched, without which they would be tough and diſagreeably bitter; the plants of themſelves naturally incline to whiteneſs in the hearts, but this may be greatly promoted and improved by art, when the plants are arrived at full growth. Different methods are practiſed, ſuch as tying the leaves of each plant up cloſe together; taking up the plants, and replanting them directly almoſt to their tops in ridges of dry earth; laying boards or tiles flat-ways on the plants; but this latter is the moſt unnatural and ineffectual of all the methods; and the beſt of all is the tying up the leaves, which in a fortnight will be blanched. The proper period to begin this work is, when the plants are nearly full grown; that is, when they are ſo much advanced, that the leaves of the different plants interfere, and their hearts are full and buſhy; but they are not all to be tied up at once, only a due ſupply of the largeſt and forwardeſt plants once every ten or twelve days, according to the demand either for private uſe or market. Dry weather, if poſſible, ought to be choſen for this work, and when the plants themſelves are alſo dry, then, having ſome ſtrong baſs ſtrings, or oſier twigs, gather all the leaves of each plant up regularly, diveſting them of damaged ones, and with theſe materials tye them cloſe together a little above the middle, or within about three inches of the top, being careful not to bind them too ſtraight.

In fifteen or eighteen days ſome of the forwardeſt plants of each tying will be tolerably well blanched, but in about three weeks they will be in excellent order.

To blanch them in ridges of earth. This is ſometimes practiſed in winter, when there is danger of ſevere froſt ſetting in; for by burying the plants almoſt to their tops, they are more out of the power of froſt. In November or December, or when you apprehend hard weather is approaching, let a warm lying piece of light dry ground be trenched up in one or more ſharp ridges two or three feet wide at bottom, and near as much in height, and ſide-ways to the ſun, making the ſides as ſteep as poſſible, that wet may run quickly

quickly off; then, in a dry day, take up a quantity of your full-grown plants, with their roots entire, diveſting them of damaged leaves, and then gathering each plant cloſe in your hand, place them horizontally in the ſunny ſide of the ridge of earth almoſt to their tops, and about ſix or eight inches each way diſtant, which is room enough, as it is only juſt to blanch them; here they will take root and blanch effectually, obſerving, that when ſevere froſty weather prevails, it would be of much advantage to cover the ridge with dry long litter, to ſecure the plants, and prevent the earth from being frozen hard, that they may be readily taken up when wanted.

In very ſevere weather, it would alſo be of much advantage to beſtow covering on ſome of the beſt plants in the full ground; and where there is only a few for family uſe, it may be eaſily effected either by mats or dry long litter, being careful to remove the covering as ſoon as the weather alters.

*Saving the Seed.*

Particular attention is neceſſary in ſaving Endive-ſeed, to mark for that purpoſe ſome of the very beſt ſorts of each variety, for the plants are very ſubject to degeneracy.

Therefore, in October or November, place ſome ſticks as marks to ſome of the moſt ſtocky full plants, which may either remain, or in March be tranſplanted into a ſheltered ſunny ſituation, in rows two feet diſtance, and eighteen inches aſunder in the lines; or if planted in a ſingle row againſt a ſouth wall, pale, or hedge, it would be convenient for ſupporting their ſeed-ſtems. They will ſhoot up their ſtems in April or May, which early in June will require ſupport, either of a ſtout ſtake to each plant, or, if ſituated againſt a wall, &c the ſtems may be faſtened thereto by a line of packthread; the ſeed will ripen in July and Auguſt, having attention to cut off the branches from time to time as the ſeed acquires maturity, which, according as it is properly dried in the ſun, beat out on cloths, and put it up for uſe in bags or boxes.

CIRRHUS, a Claſper or Tendril; that fine ſpiral ſtring iſſuing from the branches, foot-ſtalks, and leaves, of many ſorts of trailing and climbing plants, by which they faſten themſelves to other bodies for ſupport.

A Claſper is one of the ſeven ſpecies of *Fulcra*, or props or ſupports of plants. See FULCRA.

Claſpers are of ſingular uſe to moſt of the trailing and climbing tribe, in aſſiſting them to climb and ſupport themſelves, as they moſtly have long, ſlender, fragile ſtalks and branches, which would trail on the ground, and be liable to be diſplaced, and frequent breakings, unleſs by means of their tendrils, which either twine round any thing in their neighbourhood; as, for inſtance, thoſe of peas twine round ſticks or buſhes, and thereby mount their ſtalks and branches ſeven feet high; and thoſe alſo of the vine and paſſion-flower, and of many others, twine round their own, or neighbouring branches, or any other contiguous ſupport; and ſome climbers emit Claſpers, which plant themſelves like roots in the adjacent walls, or the bark of neighbouring trees, as exemplified in ivy, the *Bignonia Radicans*, the *Solanum Dulcamara*, and many other ſorts; their ſtalks thereby mounting thirty or forty feet high. See CLIMBER.

As to the ſituation of Claſpers on the reſpective plants, they ſometimes are placed oppoſite to the leaves, as in the vine; ſometimes at the ſide of the foot-ſtalk of the leaf, as in the paſſion-flower; and ſometimes proceed from the leaves themſelves, as in the pea; and are either ſimple, or of one ſtring, as in moſt Cirrhus plants; or compound, i. e. of two or more, as in *Lathyrus Latifolius*, broad-leafed or common everlaſting pea.

CISTUS, Rock-Roſe, *(Ciſtus)*.

This genus furniſhes beautiful ſhrubby evergreens for the pleaſure ground and greenhouſe, adorned with oblong, ſpear-ſhaped leaves, and numerous quinquepetalous white and purple flowers.

Claſs and order, *Polyandria Monogynia*.

*Characters.*] CALIX, five roundiſh concave leaves. COROLLA, five roundiſh, large, plane, patent petals. STAMINA, numerous capillary filaments, and roundiſh antheræ. PISTILLUM, a roundiſh germen, ſingle ſtyle, and plane orbicular ſtigma. PERICARPIUM, an oval, covered capſule, and numerous, ſmall, roundiſh ſeeds.

There are numerous ſpecies of *Ciſtus*, the greater part of which are of the ſhrub kind, and there are ſome of herbaceous growth; but thoſe that merit notice in gardening are moſtly ſhrubby evergreens, very floriferous and ornamental.

The ſpecies of our gardens are,

1 CISTUS *Populifolius*.

*Poplar-leafed Ciſtus.*] Ciſtus with a ſhrubby

ſtem, branching each way five or ſix feet high, garniſhed with large, heart-ſhaped, pointed, ſmooth leaves, having foot-ſtalks; and at the ſides and ends of the branches numerous large white flowers.

[2]CISTUS *Ladaniferus.*

*Ladanum-bearing, or Spaniſh Gum Ciſtus.*] Ciſtus with a ſhrubby ſtrong ſtem, branching from the bottom upward, forming a buſhy head five or ſix feet high, adorned with ſpear-ſhaped leaves, ſmooth and green on the upper ſide, whitiſh and veined below, ſtanding on ſhort foot ſtalks joining at their baſe round the branch like a ſheath; and numerous large purpliſh flowers at the ſides and ends of the branches.

*Varieties.*] *Willow-leafed Ladaniferous Ciſtus* —having narrow pear-ſhaped leaves, and large white flowers, having a purple ſpot at the baſe of each petal—and with entire white flowers.

[3]CISTUS *Albidus.*

*White Downy-leafed Ciſtus.*] Ciſtus with a ſhrubby ſtem, branching erectly from the bottom five or ſix feet high, having woolly branches, garniſhed with oval-ſpear-ſhaped, trinervous, white, downy, cloſe-ſitting leaves; and all the branches terminated by large bright purple flowers.

[4]CISTUS *Creticum.*

*Cretan Ladaniferous Ciſtus* ] Ciſtus with a ſhrubby ſtem, branching laterally three or four feet high; oval-ſpatulated, enervous, rough leaves, on ſhort foot-ſtalks; and deep purple flowers, on footſtalks at the ends of the branches.

[5]CISTUS *Monſpelienſis.*

*Montpelier Gum-Ciſtus.*] Ciſtus with a ſhrubby ſtem, branching laterally from the bottom upward, three or four feet high; ſpear-ſhaped, trinervous, hairy, cloſe-ſitting, dark-green leaves; and from the ends of the branches, long naked foot-ſtalks, ſuſtaining many large white flowers.

[6]CISTUS *Piloſus*

*Hairy Round-leafed Ciſtus.*] Ciſtus with a ſhrubby, ſtrong, rough ſtem, branching to a large buſhy head, a yard or four feet high, garniſhed with oval-roundiſh hairy leaves, growing oppoſite on ſhort foot-ſtalks; and many large purple flowers from the ſides and ends of the branches.

[7]CISTUS *Incanus.*

*Hoary-leafed Ciſtus.*] Ciſtus with a ſhrubby ſtem, branching to a large buſhy, head three or four feet high; ſpatulate-ſhaped, hoary, rough, cloſe-ſitting leaves, the lower ones oval and united at their baſe, the upper ones ſpear-ſhaped and diſtinct; and all the branches and ſhoots terminated by large purple flowers.

*Varieties.*] Long-leaved Hoary Ciſtus —— Roundiſh-leaved Hoary Ciſtus—Large Hoary-leaved Ciſtus.

[8]CISTUS *Criſpus.*

*Waved Curled-leafed Ciſtus.*] Ciſtus with a ſhrubby ſtem, diffuſing horizontal branches, forming a ſpreading head a yard or more high; ſpear-ſhaped, waved, bending, hairy leaves, in pairs oppoſite; and from the axillas of the leaves, many white flowers on naked foot-ſtalks.

[9]CISTUS *Salvifolius.*

*Sage-leafed Ciſtus.*] Ciſtus with a ſhrubby, ſlender, ſmooth ſtem, a yard high, branching horizontally and ſpreading, garniſhed with ſmall, oval, hairy, petiolated leaves; and from their axillas, white flowers on long naked foot-ſtalks.

[10]CISTUS *Laurifolius.*

*Bay-leafed Gum-Ciſtus.*] Ciſtus with a ſhrubby ſtrong ſtem, branching erectly, forming a head five or ſix feet high; oblong oval, trinervous, petiolated leaves, ſmooth and green above, their foot-ſtalks joined at the baſe; and from the ſides and ends of the branches, large white flowers on branching foot-ſtalks.

[11]CISTUS *Halimifolius.*

*Sea-Purſlane-leafed Ciſtus* ] Ciſtus with a ſhrubby ſtem, branching erectly from the bottom upward, forming a buſhy head four feet high, adorned with oblong-oval, very white, hoary leaves, in pairs oppoſite; and at the ſides and ends of the branches, very long, branching, naked foot-ſtalks, ſupporting large, bright, yellow flowers.

*Varieties.*] Broad-leafed *Halimifolius* Ciſtus —Narrow-leafed *Halimifolius* Ciſtus.

The flowers of all theſe ſpecies are compoſed each of five large, round, ſpreading petals, ſee the *Characters*; and are extremely numerous on the plants, appearing principally in May, June, and July; and many of the ſorts afford plenty of ripe ſeeds.

The leaves of theſe ſhrubs exhibit great variety in different ſpecies, being of very different ſhapes, ſizes, and of many different ſhades of green and white, and which, in moſt of the ſpecies, are covered with a clammy or gummy ſubſtance, of a ſtrong balſamic ſcent, of which is prepared the ladanum of the ſhops; hence ſeveral of the ſpecies are titled Ladaniferous, or Gum-bearing Ciſtus, which they

they impart more abundantly in the ſummer months, and is collected for uſe in the countries where the ſhrubs naturally grow.

They are natives principally of the ſouthern parts of Europe, but ſucceed here in the open air the year round.

All the ſpecies are beautiful evergreen ſhrubs, generally very branchy quite from the bottom, forming diffuſed heads, and are all very ornamental in gardens, not only as evergreens, effecting a fine variety at all ſeaſons, with their leaves of different figures, ſizes, and ſhades of green and white, but alſo as firſt-rate flowering ſhrubs, being very profuſe in moſt elegant flowers, which, though of only one day's duration, there is a daily ſucceſſion of great numbers of new ones, continued a month or ſix weeks on the ſame plant; and when there are different ſpecies, they will exhibit a conſtant bloom near three months, and all the ſorts begin flowering when little more than a foot high.

They are all hardy enough to proſper in the full ground in any dry ſoil, and if they have a ſheltered ſituation it will be an advantage, as, in open expoſures, they are rather ſubject to injury from very ſevere froſt; for which reaſon, where there is green-houſe room, a plant or two of each ſort may alſo be potted to have ſhelter in winter, by way of reſerve, eſpecially while young.

The more tender ſorts are the *Ceſtus Laurifolius*, and *Halimifolius*.

Their ſituation in ſhrubbery works ſhould be towards the front of the clumps and other compartments, in aſſemblage with the choiceſt ſhrubs of ſimilar growth, diſperſing them ſo as to effect variety, and to have ſhelter of the other plants; but by no means croud them.

Let all the ſorts aſſume their own natural growth, that is, never to ſhear or trim them cloſe, but only juſt ſhorten or retrench with a knife any particular rambling branch.

*Propagation.*

All the ſorts of *Ciſtus* are raiſed by ſeeds and cuttings, either in common earth, or in a hot bed.

The ſeeds produce the handſomeſt plants, and the time for ſowing is March. Theſe ſeeds may either be ſown in a warm border near half an inch deep, and the plants will come up in ſix weeks; or, to bring them more forward, the ſeed may be ſown in pots, and plunged in a moderate hot-bed, and the plants will appear in leſs than a month, when they muſt be afforded the full air in mild weather; and frequent waterings is alſo neceſſary to the plants raiſed in either method, as well as occaſional ſhade from the ſcorching ſun while young. The plants will grow near a foot high the ſame year; but when they are an inch or two high, ſome may be pricked out to thin them, planting ſome ſeparately in ſmall pots, others in a rich border, giving occaſional ſhade and water during ſummer, and in October move the potted plants to a frame to have ſhelter from froſt; all thoſe in the full ground ſhould alſo be ſhielded in froſty weather with mats. In ſpring, thoſe left in the ſeed-bed ſhould be planted out, and the potted plants ſhifted into larger pots, in which they may be continued, to have ſhelter another winter; and in ſpring following tranſplant moſt of them into the nurſery, or where they are always to remain.

By cuttings: their propagation this way may be performed any time from May till Auguſt. Chuſe cuttings five or ſix inches long, and plant them in a bed of rich earth, giving occaſional ſhade and water; they will be rooted, and fit to tranſplant into ſeparate pots in eight or ten weeks, managing them as the ſeedlings.

If a quantity of cuttings are planted in pots in ſpring, and plunged in heat, it will bring them much forwarder.

CITHAREXYLON, Fiddle-wood, or Fidelle-wood.

It furniſhes two beautiful evergreen ſhrubs for the ſtove, adorned with large oblong leaves, and bunches of funnel-ſhaped, monopetalous, white flowers.

Claſs and order, *Didynamia Angroſpermia.*

*Characters.*] CALIX, monophyllous, and indented into five parts. COROLLA, one funnel-ſhaped petal, five-parted and ſpreading at top. STAMINA, two long and two ſhort filaments, and didymous antheræ PISTILLUM, a roundiſh germen, ſlender ſtyle, and headed ſtigma. PERICARPIUM, a roundiſh unilocular berry, and two ſeeds.

The ſpecies are,

[1]CITHAREXYLON *Cinereum.*

*Cinereous Citharexylon.*] Citharexylon with an upright robuſt ſtem, taper branches, and cinereous bark; oblong-oval firm leaves, placed oppoſite; and at the ſides and ends of the branches looſe ſpikes of white flowers.

[2]CITHAREXYLON *Caudatum.*

*Caudated Citharexylon* ] Citharexylon with an upright robuſt ſtem, divided into many

taper branches; oboval oppoſite leaves; and long ſpikes of white flowers at the ends of the branches.

They grow to large trees in America, but appear like ſhrubs in this country, where they muſt be always retained in pots, and continued in the ſtove, except about two months in the heat of ſummer.

Both the ſpecies are propagated by ſeed procured from America, ſowing it half an inch deep in pots of rich earth, and plunge them in a bark-bed.

They may alſo be propagated by cuttings planted in ſpring in pots of rich earth, and plunged in the bark-bed.

CITRUS, the Citron-tree, including the *Limon* or Lemon-tree, and *Aurantium*, the Orange-tree.

Former authors on gardening and botany conſidered the Citron, Lemon, and Orange, as three diſtinct genera, and treated of them accordingly; but their generical characters being the ſame, Linnæus joins them all as ſpecies and varieties of the genus *Citrus*.

They are all moſt beautiful evergreens of the tree kind, natives of diſtant warm climates, ſo are retained here as green-houſe plants.

Claſs and order, *Polyadelphia Icoſandria*.

*Characters.*] CALIX is monophyllous and indented in five parts. COROLLA, five oblong, plane, ſpreading petals. STAMINA, twenty filaments, united below into ſeveral bodies, and oblong antheræ. PISTILLUM, a roundiſh germen, cylindric ſtyle, and globular ſtigma. PERICARPIUM, a large, baccaceous, oval, fleſhy-rinded fruit, full of ſucculent pulp, and divided internally into nine cells, each containing two oval hard ſeeds or kernels.

There are but three ſpecies, each of which admits of many varieties in reſpect to the properties of their reſpective fruit, though, according to Linnæus, the Lemon is only a variety of the Citron; there is indeed but little difference in their general habit, only that the Citron is rather the ſtrongeſt ſhooter, the leaves and fruit larger; and the leaves of both theſe ſorts are large and thick, and having linear foot-ſtalks, are diſtinguiſhable from the Orange, whoſe leaves are rather ſmaller, and of thinner ſubſtance, and have winged foot-ſtalks, *(petiolus alata)* i. e. a ſort of leafy appendage at the baſe of each leaf.

The ſpecies are,

[1]CITRUS *Medica.*

*The Citron-tree.*] Citrus with an upright ſmooth trunk, divided at top into a branchy, ſtrong-ſhooting, full head, from about five to fifteen feet high, adorned with large, oval-ſpear-ſhaped, thick leaves, having linear foot-ſtalks, and numerous flowers from the ſides of the branches, ſucceeded by very large, oblong oval, pointed, rough-rinded fruit.

There are many varieties; the fruit is held to be a ſovereign remedy againſt poiſon, and is an excellent ſweetmeat, for which it is principally eſteemed, being rarely eaten raw.

*The Varieties of note are*] Citron-tree with ſour fruit—with ſweet fruit—with warted fruit—with long fruit—with recurved fruit—with bloatched leaves.

[2]CITRUS *Limon.*

*The Lemon tree.*] Citrus with an upright ſmooth trunk, divided upward into a branchy regular head, from five to twelve or fifteen feet high; large, oval, ſpear-ſhaped, pointed, ſlightly-ſawed leaves, on linear foot-ſtalks; and many flowers from the ſides of the branches, ſucceeded by large oval fruit, prominent at the top.

*Varieties of note are*] Lemon-tree with ſour fruit—with ſweetiſh fruit—with very large fruit, called Imperial Lemon—with pear-ſhaped fruit—with furrowed fruit——with cluſtered fruit—with childing fruit—with whitiſh fruit—with tricolor-ſtriped fruit—with gold-ſtriped leaves—with ſilver-ſtriped leaves—with double flowers.

*The Lima, or Small American Lemon, called Lime*—the tree having ſomewhat ſpinous branches, oval entire leaves, and very ſmall ſour fruit—and with ſweet fruit.

[3]CITRUS *Aurantium.*

*Aurantium, or Orange-tree.*] Citrus with an upright trunk, dividing upward into a branchy regular head, from five to ten or twelve feet high; oval, ſpear-ſhaped, entire leaves, having winged foot-ſtalks, and numerous white flowers at the ſides of the branches, ſucceeded by globular fruit, compreſſed at both ends.

Varieties of moſt note are,

*Seville Orange*—A large, rough-rinded, ſour fruit, of excellent quality for œconomical uſes. The tree is a handſome grower, and rather the hardieſt of all the Orange tribe, as in this country it ſhoots freely, produces large and beautiful leaves, and flowers ſtronger and more abundantly, and generally bears a greater quantity of fruit, than any other ſort, and arrives to greater perfection; ſo theſe trees ſhould be the moſt cultivated.

*China Orange*—The tree has moderate-ſized leaves,

leaves, and a ſmooth, thin-rinded, ſweet fruit, of which are ſeveral varieties in warm countries, where they grow in the open ground.

*Great Shaddock-Orange, or Pumplemoes*—The tree a large grower and ſtrong ſhooter, with large, thick, ſomewhat ſerrated leaves, and very large fruit, having a reddiſh pulp; derives the term *Shaddock* from one of that name, who firſt brought it from the Eaſt-Indies.

*Horned Orange*—A common-ſized tree, producing fruit which divide, and the rind runs out into diviſions like horns.

*Hermaphrodite Orange*—A common ſized tree, producing fruit partly like an Orange, and partly Citron ſhaped.

*Willow-leafed Orange-tree*—having narrow, ſpear-ſhaped leaves—Striped Willow-leafed Orange.

*Dwarf Orange-tree, or Nutmeg-Orange*—having a low ſtem, and ſmall buſhy head, growing two or three feet high; ſmall oval leaves in cluſters; and numerous flowers in cluſters, covering the branches, ſucceeded by very ſmall fruit.

Other varieties are—Silver ſtriped-leaved Orange-Tree—with gold-ſtriped leaves——with curled leaves—with double flowers.

Of each of the above three ſpecies, there are many more leſs material varieties than are here noticed, in the countries where they grow in the open ground; and the varieties, like our apples and pears, may be multiplied by ſeed without end, but, like other fruit ſo raiſed, it is probable there may not be one in a hundred worth notice; ſo that the approved ſorts can only be continued with certainty by budding.

The flowers of all the ſpecies and varieties are formed each of five ſpreading petals, appearing here principally in May or June, and the fruit continue ſetting in June and July, and ripen the year following.

All the ſorts are elegant evergreens of the tree kind, obtaining in England from about five to eight or ten feet ſtature, forming full and handſome heads, cloſely garniſhed with beautiful large leaves the year round, and a profuſion of ſweet flowers, in ſpring and early in ſummer, which, even in this country, are often ſucceeded by abundance of fruit, ſometimes arriving to tolerable perfection; but the chief merit of theſe trees in England is for ornament, which conſiſts not only in their beautiful foliage, but alſo in the flowers and fruit, and have this peculiar merit, as to exhibit bloſſom, green fruit in different ſtages of growth, and full-grown ripe yellow fruit, all at the ſame time, which, together with their large ſhining-green leaves, effects one of the moſt beautiful contraſts of our gardens, which renders all the ſorts very deſireable furniture for the green-houſe collection; but the Oranges and Lemons are rather the hardieſt, and generally more fruitful here in England than the Citron, and the Seville-Orange moſt of all, which is the only ſort of Orange to be depended on for any conſiderable quantity of flowers and fruit; the tree being hardieſt, retains its fruit in winter better than moſt of the other varieties.

Theſe trees are all natives originally of India, but have been long retained in our gardens as green-houſe plants; and in the ſouthern parts of Europe, as Portugal, Spain, and Italy, they grow in the open ground like our apple and pear-trees, and from which countries vaſt quantities of the fruit are imported hither annually; but here in England the trees muſt always be continued in pots or tubs, to be houſed in winter.

They all ſucceed in the open air from the beginning of June until the middle or latter-end of October, and the reſt of the year muſt have the ſhelter of a green-houſe, and they proſper in any good garden-mould. See their *General Culture*.

Trees of all theſe ſorts are retained in moſt of the nurſeries for ſale, where ſuch perſons as are in haſte to have a collection may be furniſhed; the prices from five ſhillings to as many guineas, according to the ſorts, ſizes, and properties.

As to the method of raiſing and management of all the ſorts, ſee the following different articles of their *Propagation*, and that of their *General Culture*.

*Their Propagation by Seed for Varieties, and to raiſe Stocks to bud upon, &c.*

All the varieties of this genus were originally obtained from ſeed; but the only certain method to continue the reſpective approved varieties is by budding or inarching them on ſtocks of their own kind, raiſed from ſeed to a proper ſize. See their *Propagation by Budding, &c.*

By ſeeds, i. e. the kernels of the fruit: this method of raiſing theſe trees is rarely practiſed in England, except for ſtocks, on which to bud the different kinds; for although raiſing the trees entirely from ſeed, without budding, is the way to gain new varieties, as obſerved

obſerved of peaches and other fruits, yet out of numbers ſo raiſed, it is probable not a tree of them may produce fruit that poſſeſs any good property, but what will be ſmall, crab-like, and intolerably ſour and harſh; but when any new valuable variety is by this means accidentally obtained, it is continued and multiplied by budding it upon ſtocks, raiſed from the kernels of any of the ſorts of *Citrus*, for they all take upon one another, ſee their *Propagation by Budding*; and by which practice all the above-deſcribed varieties are annually encreaſed in our gardens. As the method therefore of raiſing them entirely from ſeeds, except for ſtocks, is both tedious and uncertain; that is, it is tedious, becauſe they are often many years before they arrive to a bearing ſtate, and uncertain, as, that after all the trouble, they perhaps are neither beautiful in their foliage, flowers, nor fruit, compared with thoſe which are budded with the known and approved kinds; ſo that in this country it is ſcarce worth practiſing, unleſs a few merely for curioſity.

The raiſing them, however, from the kernel, either to form trees for new varieties, or for ſtocks to bud upon, is, in this country, performed the moſt effectually and expeditiouſly by the aid of a hot-bed, and by which means ſtocks may be obtained, of due ſize for budding, in two years; the following is the method of raiſing them.

Early in ſpring procure ſome kernels, which may be had plentifully from rotten fruits, or others that are perfectly ripened, obſerving, that for ſtocks, the Citron, Lemon, and Seville-Orange, as being the freeſt ſhooters, are to be preferred, though the Citron is the ſtrongeſt ſhooter of the three: ſow the kernels in March, in pots of rich light earth half an inch deep, and plunge them in a hot-bed, under frame and glaſſes, of dung or tan, but the latter is preferable, giving air, and frequent ſprinklings of water. In two or three weeks the plants will come up, being careful to give air and water, and in ſix weeks, or two months more, they will be advanced four or five inches, or more, in height; obſerving, in the middle or latter end of June, to harden them to the full air, in which let them remain till October, then move them into the green-houſe, to ſtand till ſpring, when, in March or April, proceed to plant them ſingly in ſmall pots (forty-eights), being careful to ſhake them out of the ſeed-pot with their roots entire, and having half filled the other pots with light, rich, loamy compoſt, place one plant in each pot, filling it up over the roots with the ſame ſort of earth, and let them be directly watered, repeating it occaſionally till freſh rooted; afterwards treat them as other woody exotics of the green-houſe, and in a year or two, the largeſt of thoſe deſigned for ſtocks will be fit to bud.

But, to have ſtocks as forward and fine as poſſible for budding, I would adviſe, where convenient, that, as ſoon as they are potted out as above, to plunge them directly in a hot-bed, under a frame and glaſſes, about three or four months, which will draw them up in height with handſome ſtems.

A bark-bed would be the moſt eligible, made either in a glaſs-pit, or to be covered with a deep frame and lights; ſo plunging the pots to their rims in the bed, giving occaſional ſhade in the middle of hot ſunny days, and freſh air daily, by tilting one end of the lights, more or leſs, as you ſhall judge expedient: likewiſe refreſh them frequently with water, and by the middle or end of July the plants will be advanced fifteen or eighteen inches, or near two feet high, obſerving then to harden them by degrees to the full air for the remainder of the ſummer; and, by being thus forwarded, thoſe deſigned for ſtocks will be in excellent order for budding the year following. See their *Propagation by Budding*.

But theſe ſeedlings may ſtill be more forwarded, and a year or two's growth may be gained by forcing them, as above, the firſt ſeaſon. This is effected by pricking out the ſeedlings the firſt year they come up, when two or three inches high, in ſmall pots, as above, to be plunged either in a bark-bed, or even in a dung hot-bed, covered with old tan eight or ten inches deep for the reception of the pots, made in a bark-pit, or, at leaſt, under ſome deep frame and glaſs, as before directed; the plants are then to be potted ſingly, according to the former directions, and plunged in the hot-bed, indulging them, as before adviſed, with occaſional ſhade, freſh air, and water; and by the middle or end of July, they will have advanced to twelve or fifteen inches, or, perhaps, to a foot and half, or near two feet in height; they muſt then be gradually hardened to the full air, by raiſing the lights more and more every day, leaving them alſo up on nights, and at laſt take them quite off in a cloudy calm day; ſo let the plants remain fully expoſed till October, then move them into the green-houſe for the winter,

and

and many of them will be in due order to receive the buds next Auguſt; and the following is the method.

*Propagation by Budding.*

The operation of budding all the ſorts of *Citrus* is performed in Auguſt upon ſtocks of their own kinds, for all the ſpecies and varieties of this genus take freely upon one another, and the budding or inoculation is performed in the common way. See INOCULATION.

But, as already noticed, the Citron, Lemon, and Seville-Orange, being the freeſt ſhooters, are generally preferred for ſtocks; and thoſe of all the ſorts are raiſed from the kernel, as above directed in the *Propagation by Seed*, which, when from about fifteen to eighteen inches, or two feet high, and about as big as a middling gooſe-quill, or a little more or leſs, are of due ſize for budding.

As to the buds for budding them, obſerve to procure cuttings only from bearing free-ſhooting trees, of the ſorts you would encreaſe; young ſhoots, that are round and plump, muſt be choſen, and from theſe take the buds in the uſual manner, being careful to inſert them in a ſmooth part of the ſtock, at about ſix to ten or fifteen inches from the bottom, one bud in each ſtock, tying them properly with a ligature of baſs. See INOCULATION.

As ſoon as the budding is finiſhed, it is proper to place the plants in their pots in the green-houſe, or in a glaſs-caſe, &c. to defend the buds from wet and drying winds, turning the budded part from the ſun; or, where there is the convenience of a ſpare bark-pit, where the heat of the bark is almoſt exhauſted, may plunge the pots therein two or three weeks, and it will more effectually promote the union of the buds; obſerving, in either department, to admit air freely, by opening the front glaſſes, allowing alſo a ſlight ſhade of mats in the middle of ſcorching ſunny days, and ſupply the pots with water every day or two during the hot weather; in three or four weeks the buds will be united with the ſtocks, when it is proper to looſen the bandage of each bud, that they may have room to ſwell; obſerving, however, that the buds will all remain dormant till ſpring.

After this there is nothing more required this year but due waterings, only obſerving, that in caſe of great rains, it will be proper to retain the plants in the green-houſe for the remainder of the ſummer, and until next ſpring.

In March following, the heads of all the ſtocks muſt be cut off ſlanting cloſe behind the inſertion of the bud; after this operation the buds will ſoon begin to ſpring, and produce each one ſhoot, which probably will obtain from about five or ſix, to eight or ten inches in length the ſame year; but it is proper to obſerve, that if they could have the aid of a bark-bed, there will be a chance of having the buds ſhoot a foot and half, or more, by the end of ſummer; therefore, where there is the convenience of a bark-pit, or glaſs-caſe, or any deep frame, that can be placed on a bark bed, &c. I ſhould adviſe by all means to make uſe of ſuch conveniencies for forwarding the firſt ſhoot of the buds; ſo that as ſoon as the ſtocks are headed, as above directed, plunge the pots in the hot-bed, and let them enjoy the benefit of air and water, in proportion to the temperature of the bed and weather; likewiſe occaſional ſhade when the ſun is very powerful: here they may be continued, with the above care, till the end of July, when ſome of the ſtrongeſt ſhooters will be advanced near two feet high; and it is then proper to begin to inure them by degrees to the full air, to harden them againſt winter, that they may be able to live during that ſeaſon in the green-houſe, to which they muſt be removed in October.

As to their culture, in reſpect to training, you may train each with a ſtem to what moderate height you think proper, though, when they have formed ſtems two or three feet high, I would ſuffer them to branch out towards the top, to form a head, which ſhould be permitted to retain their natural growth, unleſs you ſhall ſee neceſſary to ſhorten any particular ſhoots, that they may throw out laterals, to form a fuller or more regular head; likewiſe to retrench or ſhorten any very irregular or rambling branch.

For their further management, ſee their *General Culture.*

*Propagation by Inarching.*

This method of propagating Citrus-trees was more in practice formerly than ſince the art of budding them has been ſo improved, as to form much handſomer trees. See INARCHING.

When it is however deſigned to propagate by this method any of the ſorts of Citrus, ſtocks muſt be raiſed from ſeed, as before directed,

directed, which, when of due ſize, are to be placed in their pots, upon a ſort of ſtage, or ſome erection convenient to the head of the trees you intend to inarch from, obſerving to fix upon ſome convenient young ſhoots, nearly the ſize of the ſtocks, for the purpoſe of inarching; theſe are to be inarched in the ſtocks, as they grow on the trees, in April or May, one in each ſtock, and by the end of Auguſt following they will be united to the ſtock, and may be ſeparated from the parent tree.

But this method of propagating theſe trees, is rather practiſed by way of curioſity, to raiſe a few trees to a bearing ſtate in haſte, becauſe, by inarching a young bearing branch, furniſhed with fruit, into any of their own ſtocks, in April or May, it will frequently be united by the following Auguſt, and the branch ſo inarched may be ſeparated from its parent plant, and, being firmly attached to the ſtock, it then commences a new tree, bearing fruit, raiſed in the ſhort ſpace of four or five months.

By the ſame rule you may inarch an Orange into the branch of a Citron or Lemon, or all three upon the ſame tree, for the ſake of variety.

But trees raiſed by this method never grow ſo large nor handſome as thoſe raiſed by budding.

### *Of managing the trained Trees brought from abroad.*

If any one is anxious to have a collection of large trained trees of any of the ſorts of *Citrus* as ſoon and as cheap as poſſible, the only way is, to have recourſe to thoſe imported from Italy or Portugal, &c. great quantities of trained trees of all the ſorts being imported hither from thoſe countries every ſpring for ſale; they come over in cheſts, without any earth to their roots, having their roots and heads a little trimmed; they are in ſize commonly from about one inch to two or three diameter in the ſtem; the ſtem from two to four or five feet high; and by aid of a bark-bed they readily take root and grow freely, and form as good trees in two years, as we could raiſe here in fifteen or twenty from ſeed and budding.

They are ſold in the Italian warehouſes in London, the principal one of which has been for many years in the Hay-market, near the bottom, next Pall-mall, from about three ſhillings to a guinea a-piece, according to their ſize, and are generally advertiſed as ſoon as they arrive, which is early in ſpring, and the ſooner the better.

In the choice of theſe trees obſerve, they are commonly budded at ſuch height in the ſtem, as to form heads from about two to four or five feet high; and as they are frequently furniſhed with two buds, one on each ſide of the ſtem, theſe are what we ſhould chuſe, if poſſible, as they will conſequently form the moſt regular heads.

A bark-bed muſt be prepared to ſtrike them, either in a glaſs-caſe, bark-pit, or ſome other ſimilar department, where a bed can be made, either in a ſunk or raiſed pit; preparatory to their planting, place the trees half way or more in tubs of water a day or two, to plump their bark and roots, to prepare them for vegetation; then proceed to planting them, firſt cleaning their roots, and trim them from damaged parts, and all the ſmall dried fibres; likewiſe waſh and clean their ſtems, and trim the branches of the head to half a foot in length; this done, get the earth and pots; let the earth be rich and moderately light, and the pots proportionate to the ſize of the roots of the plants; place one tree in each pot, giving water as ſoon as planted; at the ſame time, it is of utility to wrap a thin hay-band ſlightly round each ſtem, to prevent their outward bark from being parched by the heat of the ſun; then let all the pots be regularly plunged to their rims in the hot-bed, prepared, as above, for their reception.

Here they are to remain three or four months; muſt be frequently, but moderately watered, both at bottom, and over their tops; and as the ſeaſon advances, and the ſun's heat is vehement, it is neceſſary to ſhade the glaſſes a few hours in the middle of ſunny days; obſerving alſo, that when the heads begin to ſhoot freely, do not omit giving air, which muſt be gradually encreaſed, in proportion to the heat of the ſeaſon, and advanced growth of the ſhoots; by the beginning of June the heads will be conſiderably advanced in ſhooting, at which period obſerve, if the ſhoots are but thinly placed, it is eligible to top them, to promote their emitting laterals to form a fuller head; at this time alſo admit air freely, to harden the ſhoots gradually, to prepare the trees for being moved to the full air in the middle or latter-end of July; they ſhould then be placed in a ſituation, defended from boiſterous winds, and the violence of the noon-day ſun, to remain till the beginning of October; then to be placed in the green-houſe for the winter,

and managed as the other trees. See their *General Culture.*

*General Culture of all the Sorts.*

As to the general culture of all theſe trees, whether raiſed in England, or procured from abroad, let it be obſerved, that, as all the three ſpecies and their varieties are ſo nearly alike in their nature, one common method of culture ſerves for the whole; they all proſper in any common rich earth or compoſt, and muſt all be retained always in pots or tubs, for the convenience of moving them to ſhelter of a green-houſe in winter; or the trees may even be planted in the full ground, to be trained either as wall-trees or ſtandards, provided there is a proper frame erected for the ſupport of glaſs lights, to ſhield them in winter, and with flues, to make occaſional fires in ſevere weather.

It is neceſſary to obſerve, that all the ſorts ſucceed in the open air here, only from the latter end of May until the middle or end of October; the reſt of the year require ſhelter of a green-houſe, &c.

In the green-houſe, place the talleſt trees behind, and the loweſt in front; or, where they are all nearly of a height, thoſe behind ſhould be elevated upon ſtands, ſo as their heads may form a ſort of gradual ſlope from the front to the backward row, and, if poſſible, their heads ſhould ſtand clear of each other During their reſidence in the green-houſe, the principal care is to give air and water, and ſecure them from froſt; freſh air muſt be admitted freely every day in all mild calm weather, when not foggy or very wet, by opening the windows leſs or more, from about eight or nine in the morning, till three, four, or five, &c. in the evening, according to the temperature of the day, giving moſt air in mild ſunny weather: waterings will be neceſſary during their abode here, about once a week, or ten or twelve days, as you ſhall ſee proper; and according to the weather and advanced period of the winter or ſpring, or power of the ſun, and at all times, while in the houſe, be ſure to water moderately, for much moiſture at this time would occaſion their leaves and young fruit, if any, to grow yellow, and very probably to drop. Their other further care in this department is, chiefly the waſhing their heads occaſionally from filth and inſects, clearing off decayed leaves, and protecting them from froſt, by ſecuring the windows, &c. the ſame as directed for the green-houſe plants in general. See GREEN-HOUSE PLANTS

In the open air their culture is—towards the latter end of May, or beginning of June, according to the temperature of the ſeaſon, begin to move theſe trees in their pots or tubs into the full air, placing them to adorn any particular part of the pleaſure ground, obſerving, when firſt brought forth, to waſh and clean their heads from duſt and other filth they may have contracted in the green-houſe. During the ſummer ſeaſon, ſupply them with water two or three times a week, or oftener, in very hot dry weather, at which time it is proper to lay ſome mowings of ſhort graſs on the ſurface of the pots or tubs, to preſerve the moiſture of the earth the better, obſerving now and then to water all over their heads; with this care they are to be continued in the open air till October, then remove them into the green-houſe, and manage them as before.

At any time of the year, when the ſurface of the earth in the pots or tubs binds, it is proper to ſtir it an inch or two deep; and if this is done in ſpring, and the looſe earth taken out, adding the ſame quantity of new, it will be very ſerviceable.

Shifting the plants into larger pots or tubs, and freſh earth, is neceſſary every ſecond or third ſpring at moſt, and April is the proper ſeaſon; draw them out of their preſent pots with the ball of earth entire; let all the outſide matted mouldy roots be pared off cloſe, and part of the old earth at top, ſides, and bottom, taken away: being then prepared with freſh compoſt, let the pot or tub be cleaned out, or, if a new larger one is neceſſary, have that ready, and lay ſome crooked pieces of tiles over the holes at bottom, and put in ſome earth; then place the tree in the pot or tub, and fill up the vacancy with more compoſt, preſſing it down on every ſide, finiſhing the work with a moderate watering, and retain the plants in the green-houſe till the end of May or beginning of June.

In thoſe years the plants do not require ſhifting, it is of much utility to looſen the earth in the top of the pots or tubs, as low as the ſurface of the roots, and down round the ſides; taking out the looſened earth, fill up the pot with freſh compoſt, and give water directly, to ſettle the earth cloſe.

Any of the trees having thin, ſtraggling, or irregular heads, the way to render them more regular, is to prune all the branches

moderately ſhort, nearly to an equal length, in March or April; at the ſame time ſhifting the plants, as above directed, and they will ſoon after break forth in the old wood into many young ſhoots, which you may regulate as you ſhall ſee neceſſary; or, if the ſhoots ariſe thinly, ſome of the ſtrongeſt may be topped in June, and they will furniſh laterals the ſame year to fill the head.

But ſuch of theſe trees as have very weak irregular heads, producing ſmall ill-coloured leaves, &c. it is adviſeable to prune the head pretty cloſe, and ſhift the tree into entire freſh earth; that is, ſhake all the old earth quite from the roots, then prune off all decayed roots and ſmall fibres, and tip the ends of the roots in general, and ſoak and waſh the whole in water, and then plant it in entire new compoſt, and directly give water; after this it would be of conſiderable advantage, where convenient, to plunge them in a bark hot-bed, made either in a glaſs-caſe, bark-pit, or even in the green houſe, in which let them remain until July, when they will have made ſtrong ſhoots, and form a new full and regular head, adorned with fine, large, luxuriant leaves.

When any of the ſorts of theſe trees have obtained a large ſize, they ſhould be ſhifted into tubs, hooped with iron hoops, and with two ſtrong hooked iron handles near the top of each tub, to receive poles to lift the trees in and out of the green-houſe. See TUBS, &c.

The flowering and fruit-ſetting ſeaſon of all the ſorts of *Citrus* is commonly in June and July; they are often very profuſe in flowers, particularly the Orange-tree, which, in healthful large trees, are generally greatly loaded with bloſſom: when they ſtand very thick, it is eligible to thin them a little, taking off the ſmalleſt; and, obſerving, as the trees continue blowing and ſetting their fruit for two months, that, when a full crop of fruit is ſet, it is of benefit to the trees and fruit, to gather off the ſuperabundant bloſſom as they are produced, though many permit them to remain for the ſake of their ornamental appearance.

The flowers which are thinned off, if they are not wanted for family uſe, for Orange-flower-water, &c. may, if any quantity of them, be ſold to good advantage, i. e. three or four ſhillings per pound weight; the chymiſts and perfumers often buy them; but in Covent-garden market in London there is always ready ſale for them, either in the open market, or in the phyſic-herb ſhops.

Compoſt, the moſt proper for all the ſorts of *Citrus*, is that of a light loamy nature, though they will all proſper in any rich garden earth. See COMPOSTS.

*Of planting them in the full Ground as Wall and Standard-Trees.*

In regard to planting theſe trees in the full ground, as already hinted, obſerve, that when this is intended, there muſt be frame-erections for the ſupport of glaſs and other covers, to defend the plants in inclement weather; and in which ſituation the trees, as having full ſcope for their roots, generally ſhoot ſtrong, and produce large fruit, and may either be trained as wall or ſtandard-trees.

A ſouth wall, in a dry ſituation, is a proper place for training them as wall-trees, againſt which may be erected wooden frame-work ſloping, either fixed or moveable, for the ſupport of glaſs frames for winter; likewiſe, for the greater protection of the trees in ſevere froſts, there may be a fire-place, with a flue or two, carried along a low wall in the front and ends; ſo plant the trees in the full border againſt the back wall, and train their branches thereto five or ſix inches diſtance, obſerving to defend them with the glaſſes from October till the middle or end of May, giving air and occaſional water as for thoſe in the green-houſe, and cover the glaſſes on nights in bad weather, and only in very ſevere froſt employ the flues, if any, with very moderate fires, &c. juſt to keep out the froſt; and in the beginning of June remove the glaſſes quite away, obſerving to lightly dig up the borders two or three times a year, and ſupply them with neceſſary manure annually.

To have the trees as ſtandards, a more capacious and lofty glaſs-caſe ſhould be erected againſt the wall, in the manner of a hot-houſe, but higher; ſo making a border the whole width and length, planting therein one or two rows of trees lengthways, ſuffering the trees to run up as ſtandards, giving only ſome neceſſary pruning, juſt to preſerve regularity; and as to their protection, &c. manage them as above directed.

In ſome places there are lofty moveable glaſs-caſes, ſo that two or three rows of trees are planted in a conſpicuous part of the pleaſure-ground, and in winter the frame is put over them, in ſummer taken wholly away; ſo they appear like a little Orange grove growing in the open ground; and if the trees are well protected by the glaſſes, and other occaſional

occaſional covers, &c. in winter, they will grow to a much greater height than thoſe in tubs.

CLASSIS, a Claſs, and in botany is the firſt and higheſt diviſion in the arrangement of plants ſyſtematically, and by which the whole vegetable kingdom is divided into twenty-four Claſſes, diſtinguiſhed by ſome eſſential and invariable mark in the fructification, poſſeſſed by all the plants of each reſpective Claſs; and by the ſame rule, each Claſs is ſubdivided into ſecondary diviſions or orders, the orders into genera, and each genera or genus into ſpecies, and the ſpecies into varieties. See ORDO, GENUS, SPECIES, and VARIETAS.

A Claſs, therefore, in botany, is defined to be an aſſemblage or collection of genera, that have ſome ſtriking mark in common, derived from the fructification, i. e. generative parts of the flower; as, for inſtance, one ſtamina, or male organ. Every genus and ſpecies, therefore, having flowers with one ſtamina, belong to the firſt Claſs, (*Monandria*, i. e. of *one* and *a man*); of two ſtamina, belongs to the ſecond Claſs, (*Diandria*, i. e. of *two* and *a man*); and of three ſtamina or male organs, to the third Claſs, (*Triandria*, i. e. of *three* and *a man*); and ſo of all the others, as explained under each head in the ſucceeding arrangement of the twenty-four Claſſes. Each of theſe Claſſes, as above noticed, are ſubdivided into ſections or orders, and that, as the eſtabliſhment of the Claſſes, is founded on the number of ſtamina, or male organs: the orders, or ſecondary diviſions, are founded principally upon the number and ſituation of the piſtil, i. e. ſtyle, or female organ, or ſome other ſtriking part of the fructification; as, for example, we obſerved above, that all plants having only one ſtamina, belong to the firſt Claſs, *Monandria*; of which Claſs there are but two orders, the firſt of which having one ſtyle, (*Monogynia*, i. e. of *one* and *a woman*) is *Monandria Monogynia*, one ſtamina and one ſtyle; the ſecond have two ſtyles, (*Digynia*, of *two* and *a woman*) is *Monanaria Digynia*, one ſtamina and two ſtyles: the ſame is alſo obſervable in the ſecond, third, and every ſucceeding Claſs, as is ſufficiently illuſtrated in the following arrangement of the twenty four Claſſes, and their reſpective ſecondary diviſions or orders, according to the Linnæan ſexual ſyſtem, as founded on the fructification or ſexes of plants. See SEXUS.

*Firſt Claſs.*

1. MONANDRIA, of *one* and *a man*, *one male organ*, comprehending plants with hermaphrodite flowers, having but one ſtamina, or male organ, and of which there are but two orders, theſe derived from the number of ſtyles in each order.

The orders are,

[1]MONANDRIA MONOGYNIA—one ſtamina and one ſtyle.

[2]MONANDRIA DIGYNIA—one ſtamina and two ſtyles.

*Second Claſs.*

2. DIANDRIA, of *twice*, or *two*, and *a man*, *two male organs*, plants with hermaphrodite flowers, having two ſtamina, or male organs, and conſiſts of three orders, derived from the number of ſtyles, or female organs, in each order.

The orders are,

[1]DIANDRIA MONOGYNIA—two ſtamina and one ſtyle.

[2]DIANDRIA DIGYNIA—two ſtamina and two ſtyles.

[3]DIANDRIA TRIGYNIA—diandrous plants with three ſtyles.

*Third Claſs.*

3. TRIANDRIA, of *three* and *a man*, *three male organs*, plants having hermaphrodite flowers, with three ſtamina, or male organs, and conſiſts of but three orders.

The orders are.

[1]TRIANDRIA MONOGYNIA—three ſtamina and one ſtyle.

[2]TRIANDRIA DIGYNIA—three ſtamina and two ſtyles.

[3]TRIANDRIA TRIGYNIA—three ſtamina and three ſtyles.

*Fourth Claſs.*

4. TETRANDRIA, of *four*, &c. comprehends plants having hermaphrodite flowers, with four ſtamina of equal length, and compriſes three orders.

The orders are,

[1]TETRANDRIA MONOGYNIA—four ſtamina and one ſtyle.

[2]TETRANDRIA DIGYNIA—four ſtamina and two ſtyles.

[3]TETRANDRIA TETRAGYNIA—four ſtamina and four ſtyles.

*Fifth Claſs.*

5. PENTANDRIA, of *five* and *a man*, *five male organs*, compriſes plants having hermaphrodite flowers, with five ſtamina, and conſiſts of ſix orders.

The orders are,

[1]PENTANDRIA MONOGYNIA—five ſtamina and one ſtyle.

[2]PENTANDRIA DIGYNIA—five ſtamina and two ſtyles.

[3]PENTANDRIA TRIGYNIA—five ſtamina and three ſtyles.

[4]PENTANDRIA TETRAGYNIA—five ſtamina and four ſtyles.

[5]PENTANDRIA PENTAGYNIA—five ſtamina and five ſtyles.

[6]PENTANDRIA POLYANDRIA—five ſtamina and many ſtyles.

*Sixth Claſs.*

6. HEXANDRIA, of *ſix* and *a man*, *ſix male organs*, plants with hermaphrodite flowers, having ſix ſtamina, and comprehends five orders.

The orders are,

[1]HEXANDRIA MONOGYNIA—ſix ſtamina and one ſtyle.

[2]HEXANDRIA DIGYNIA—ſix ſtamina and two ſtyles.

[3]HEXANDRIA TRIGYNIA——ſix ſtamina and three ſtyles.

[4]HEXANDRIA TETRAGYNIA—ſix ſtamina and four ſtyles.

[5]HEXANDRIA POLYGYNIA—ſix ſtamina and many ſtyles.

*Seventh Claſs.*

7. HEPTANDRIA, of *ſeven*, *&c.* conſiſting of plants with hermaphrodite flowers, having ſeven ſtamina, and furniſhes four orders.

The orders are,

[1]HEPTANDRIA MONOGYNIA—ſeven ſtamina and one ſtyle.

[2]HEPTANDRIA DIGYNIA—ſeven ſtamina and two ſtyles.

[3]HEPTANDRIA TETRAGYNIA—ſeven ſtamina and four ſtyles.

[4]HEPTANDRIA HEPTAGYNIA—ſeven ſtamina and ſeven ſtyles.

*Eighth Claſs.*

8. OCTANDRIA, of *eight* and *a man*, *eight male organs*, plants with hermaphrodite flowers, having eight ſtamina, or male organs, and comprehends four orders.

The orders are,

[1]OCTANDRIA MONOGYNIA—eight ſtamina and one ſtyle.

[2]OCTANDRIA DIGYNIA—eight ſtamina and two ſtyles.

[3]OCTANDRIA TRIGYNIA—eight ſtamina and three ſtyles.

[4]OCTANDRIA TETRAGYNIA—eight ſtamina and four ſtyles.

*Ninth Claſs.*

9. ENNEANDRIA, of *nine*, *&c.* comprehends plants with hermaphrodite flowers, having nine ſtamina, and conſiſts of three orders.

The orders are,

[1]ENNEANDRIA MONOGYNIA—nine ſtamina and one ſtyle.

[2]ENNEANDRIA TRIGYNIA—nine ſtamina and three ſtyles.

[3]ENNEANDRIA HEXAGYNIA—nine ſtamina and ſix ſtyles.

*Tenth Claſs.*

10. DECANDRIA, of *ten* and *a man*, *ten male organs*, plants with hermaphrodite flowers, having ten ſtamina, or male organs, and it conſiſts of five orders.

The orders are,

[1]DECANDRIA MONOGYNIA—ten ſtamina and one ſtyle.

[2]DECANDRIA DIGYNIA—ten ſtamina and two ſtyles.

[3]DECANDRIA TRIGYNIA—ten ſtamina and three ſtyles.

[4]DECANDRIA PENTAGYNIA—ten ſtamina and five ſtyles.

[5]DECANDRIA DECAGYNIA—ten ſtamina and ten ſtyles.

*Eleventh Claſs.*

11. DODECANDRIA, of *twelve* and *a man*, *twelve male organs*, compriſes plants with hermaphrodite flowers, having twelve or more ſtamina, or male organs, and conſiſts of ſix orders.

The orders are,

[1]DODECANDRIA MONOGYNIA—twelve or more ſtamina and one ſtyle.

[2]DODECANDRIA DIGYNIA——twelve or more ſtamina and two ſtyles.

[3]DODECANDRIA TRIGYNIA—twelve or more ſtamina and three ſtyles.

[4]DODECANDRIA PENTAGYNIA—twelve or more ſtamina and five ſtyles.

[5]DODECANDRIA OCTAGYNIA—twelve or more ſtamina and eight ſtyles.

[6]DODECANDRIA DODECAGYNIA—twelve or more ſtamina and twelve ſtyles.

*Twelfth Claſs.*

12. ICOSANDRIA, of *twenty* and *a man*, or *huſband*, *twenty male organs*, conſiſts of plants with hermaphrodite flowers, having about twenty or more ſtamina, or male organs,

gans, that are inſerted either into the inner ſide of the calix, or to the corolla; by this laſt circumſtance is the Claſs in queſtion diſtinguiſhed from that immediately following, *Polyandria*, which have alſo frequently about twenty ſtamina, but they are inſerted into the receptacle. This Claſs, *Icoſandria*, is alſo diſtinguiſhable by having a monophyllous, hollow, or concave calix, and to the inner ſide of which the petals are faſtened by their claws; and there are five orders.

The orders are,

[1]ICOSANDRIA MONOGYNIA—twenty or more ſtamina and one ſtyle.

[2]ICOSANDRIA DIGYNIA—twenty or more ſtamina and two ſtyles.

[3]ICOSANDRIA TRIGYNIA—twenty or more ſtamina and three ſtyles.

[4]ICOSANDRIA PENTAGYNIA—twenty or more ſtamina and five ſtyles.

[5]ICOSANDRIA POLYGYNIA——twenty or more ſtamina and many ſtyles.

*Thirteenth Claſs.*

13. POLYANDRIA, of *many* and *a man*, or *huſband*, *many male organs*, plants with hermaphrodite flowers, having many ſtamina, or male organs, which in this Claſs are inſerted into the receptacle, and which diſtinguiſhes it from that immediately preceding, *Icoſandria*, where the ſtamina are alſo numerous, but are attached to the inner part of the calix, &c. therefore all plants having more than twelve ſtamina inſerted in the *receptaculum* are of this Claſs, *Polyandria*, and conſiſts of ſeven orders.

The orders are,

[1]POLYANDRIA MONOGYNIA—many ſtamina and one ſtyle.

[2]POLYANDRIA DIGYNIA—many ſtamina and two ſtyles.

[3]POLYANDRIA TRIGYNIA—many ſtamina and three ſtyles.

[4]POLYANDRIA TETRAGYNIA—many ſtamina and four ſtyles.

[5]POLYANDRIA PENTAGYNIA—many ſtamina and five ſtyles.

[6]POLYANDRIA HEXAGYNIA—many ſtamina and ſix ſtyles.

[7]POLYANDRIA POLYGYNIA—many ſtamina and numerous ſtyles.

*Fourteenth Claſs.*

14. DIDYNAMIA, of *twice*, and *power*, *two powers*, comprehends plants with hermaphrodite flowers, having two long and two ſhort ſtamina: in this circumſtance of the ſtamina, long and ſhort, conſiſts the main difference between the Claſs in queſtion, and that of the fourth, which have alſo four ſtamina, but which are of equal length; therefore all plants having four ſtamina that are of unequal length, two of them long, and two ſhort, are didynamous, i. e. of the Claſs *Didynamia*, of which there are but two families or orders, and are founded upon the abſence and preſence of the *pericarpium*, or ſeed-veſſel

The orders are,

[1]DIDYNAMIA GYMNOSPERMIA—— two long and two ſhort ſtamina, and naked ſeeds (*gymnoſpermia*) lodged in the calix.

[2]DIDYNAMIA ANGIOSPERMIA—two long and two ſhort ſtamina, and covered ſeeds (*angioſpermia*) lodged in a proper pericarpium, or ſeed-veſſel.

*Fifteenth Claſs.*

15. TETRADYNAMIA, of *four*, and *power*, *four powers*, plants with hermaphrodite flowers, having four long and two ſhort ſtamina, and conſiſts of two orders, founded on the pericarpium; ſuch as have a ſhort round pod, (*ſiliculoſa*) as honeſty and Candy tuft, and ſuch as have a long pod (*ſiliquoſa*), as ſtock-gilliflower, &c.

The orders are,

[1]TETRADYNAMIA SILICULOSA—— four long and two ſhort ſtamina, and ſhort round pods.

[2]TETRADYNAMIA SILIQUOSA—four long and two ſhort ſtamina, and long ſeed-pods.

*Sixteenth Claſs.*

16. MONADELPHIA, of *alone* and *a brotherhood*, *one brotherhood*, hermaphrodite flowers, having all the ſtamina united below into one body, forming a column, through which paſſes the ſtyle; and the orders are five, founded on the number of united ſtamina.

The orders are,

[1]MONADELPHIA PENTANDRIA--five monadelphous ſtamina.

[2]MONADELPHIA DECANDRIA—ten monadelphous ſtamina.

[3]MONADELPHIA ENDECANDRIA—eleven monadelphous ſtamina.

[4]MONADELPHIA DODECANDRIA—twelve or more monadelphous ſtamina.

[5]MONADELPHIA POLYANDRIA—numerous monadelphous ſtamina.

*Seventeenth Claſs.*

17. DIADELPHIA, of *twice* and *a brotherhood*, *two brotherhoods in the ſame flower*, hermaphrodite flowers, having two ſets or columns

columns of united ſtamina, i. e. united below into two different bodies; the flowers are all papilionaceous, and have apparently ten ſtamina, but which are only two, one of which ſplits longitudinally from the middle upward, and terminates in about nine parts, appearing like ſo many diſtinct filaments; and the other ſtamina is ſimple or undivided, and lies cloſely along the fiſſure of the divided filament, which have generally as many antheræ as diviſions, and the ſimple ſtamina have but one antheræ; and from the number of antheræ in both filaments is founded the orders, which are four.

The orders are,

[1]DIADELPHIA PENTANDRIA—diadelphous ſtamina, having five antheræ.

[2]DIADELPHIA HEXANDRIA—diadelphous ſtamina with ſix antheræ.

[3]DIADELPHIA OCTANDRIA—diadelphous ſtamina with eight antheræ.

[4]DIADELPHIA DECANDRIA—diadelphous ſtamina with ten antheræ.

*Eighteenth Claſs.*

18. POLYADELPHIA, of *many brotherhoods*, *many brotherhoods*, *or unions of ſtamina*, *in the ſame flower*, hermaphrodite flowers that have each many ſets of united ſtamina, i. e. united by their filaments into ſeveral diſtinct bodies, and conſiſts of three orders, derived from the number of ſtamina or antheræ, appearing in each flower.

The orders are,

[1]POLYADELPHIA PENTANDRIA—five polyadelphous ſtamina in each ſet.

[2]POLYADELPHIA ICOSANDRIA—twenty polyadelphous ſtamina.

[3]POLYADELPHIA POLYANDRIA—many polyadelphous ſtamina.

*Nineteenth Claſs.*

19. SYNGENESIA, of *together* and *generation*, plants with compound flowers, having all the antheræ, or generative male organs, united into one cylindric body, and through which the ſtyle, or generative female organ, riſes, uniting in the ſame manner.

This Claſs contains the numerous tribe of compound flowers, ſee COMPOSITUS *Flos*; and the orders, or ſecondary diviſions, ariſe from the different modes of intercommunication, or polygamia of the florets that compoſe each flower; ſuch as, the florets all hermaphrodites—hermaphrodites and females—hermaphrodites of no ſex or neuter—males and females—the florets in diſtinct cups within the main one—ſimple florets; ſo that this Claſs is divided into ſix orders.

The orders are,

[1]SYNGENESIA POLYGAMIA ÆQUALIS—equal polygamia, or the florets all hermaphrodites.

[2]SYNGENESIA POLYGAMIA SUPERFLUA—ſuperfluous polygamia, or the florets of the diſk all hermaphrodites, and the circumference or radius all females, which latter are ſaid to be ſuperfluous or uſeleſs, becauſe the impregnation of them is unneceſſary, the fructification being completed in the hermaphrodites in the centre.

[3]SYNGENESIA POLYGAMIA FRUSTANEA—fruſtrated polygamia, i. e. the florets in the radius are neuter, or of no ſex, being devoid both of ſtamina and ſtyle, ſo are ineffectual to the fructification, as in the caſe of ſunflower, &c. in which the fructification is perfected only, in the hermaphrodites, in the diſk.

[4]SYNGENESIA POLYGAMIA NECESSARIA—neceſſary polygamia, or being male and female florets, and no hermaphrodites, the preſence of the male and females is neceſſary for perfecting the fructification.

[5]SYNGENESIA POLYGAMIA SEGREGATA—ſeparated polygamia, the florets of each flower ſeparated from each other by means of partial cups, containing one or more florets, and ſtand within the general calix, as in globe-thiſtle and elephant's foot.

[6]SYNGENESIA POLYGAMIA MONOGAMIA—monogamous or ſimple florets, the flower having only one floret in each general calix, as in balſamine, *impatiens*.

*Twentieth Claſs.*

20. GYNANDRIA, of *a woman* and *a man*, plants having the ſtamina or male organs placed either upon the ſtyle or female organ, or the common receptacle elongated in the form of a ſtyle, ſupporting both the piſtillum and ſtamina; and is divided into ſeven orders, founded each on the number of ſtamina in each flower.

The orders are,

[1]GYNANDRIA DIANDRIA—two gynandrous ſtamina in each flower.

[2]GYNANDRIA TRIANDRIA—three gynandrous ſtamina in each flower.

[3]GYNANDRIA TETRANDRIA—four gynandrous ſtamina in each flower.

[4]GYNANDRIA PENTANDRIA—five gynandrous ſtamina in each flower.

[5]GYNANDRIA HEXANDRIA—ſix gynandrous ſtamina in each flower.

[6]GYNANDRIA DECANDRIA—ten gynandrous ſtamina in each flower.

[7]GYNANDRIA

[7]GYNANDRIA POLYANDRIA—many gynandrous ſtamina in each flower.

*Twenty firſt Claſs.*

21. MONOECIA, of *alone* and *a houſe*, plants with male and female flowers apart, or alone, in ſeparate cups; that is, within different cups on the ſame plant, as in the cucumber, &c. and is divided into eleven orders, ariſing from the number, union, and ſituation of the ſtamina of the male flowers.

All monoecious plants are alſo termed androgynous, from the ſame circumſtances of male and female flowers on different parts of the ſame plant. See ANDROGYNIA.

The orders are,

[1]MONOECIA MONANDRIA— monoecious plants with one ſtamina.

[2]MONOECIA DIANDRIA——monoecious plants with two ſtamina.

[3]MONOECIA TRIANDRIA — monoecious plants with three ſtamina.

[4]MONOECIA TETRANDRIA—monoecious plants with four ſtamina.

[5]MONOECIA PENTANDRIA—monoecious plants with five ſtamina.

[6]MONOECIA HEXANDRIA — monoecious plants with ſix ſtamina.

[7]MONOECIA HEPTANDRIA—monoecious plants with ſeven ſtamina.

[8]MONOECIA POLYANDRIA— monoecious plants with numerous ſtamina.

[9]MONOECIA MONADELPHIA—monoecious plants with monadelphous or united ſtamina, i. e. all the ſtamina united below into one cylindric body.

[10]MONOECIA SYNGENESIA—monoecious plants with ſyngeneſious antheræ; that is, with all the antheræ, or tops of the ſtamina, united into a cylinder, as in the cucumber, gourd, bryony, &c. See Claſs SYNGENESIA.

[11]MONOECIA GYNANDRIA—monoecious plants with gynandrous ſtamina, i. e. the filaments ſituated upon a ſort of imperfect ſtyle. See the Claſs GYNANDRIA.

*Twenty-ſecond Claſs.*

22. DIOECIA, of *twice* and *an habitation, two habitations*, male and female flowers on two ſeparate plants; that is, all the plants of this Claſs are either male or female, not hermaphrodite, as in the greater number of Claſſes; nor with male and female on the ſame plant, as in the immediately preceding Claſs, *Monoecia*, but male and female flowers on diſtinct plants, as in the genus *cliffortia*, *coriaria*, *carica*, moonſeed, ſpinach, hop, and many others; and the female plants only produce ſeeds, which, however, require the vicinity of a male plant, or the aſperſion of the male duſt to impregnate the female flowers, or at leaſt to render the ſeeds fertile; and from the ſeeds of the females, both male and female plants are produced.

This Claſs is divided into fourteen orders, and are founded upon the number, union, and ſituation of the ſtamina of the male plants.

The orders are,

[1]DIOECIA MONANDRIA—dioecious male plants with one ſtamina.

[2]DIOECIA DIANDRIA——dioecious male plants with two ſtamina.

[3]DIOECIA TRIANDRIA—dioecious male plants with three ſtamina.

[4]DIOECIA TETRANDRIA—dioecious male plants with four ſtamina.

[5]DIOECIA PENTANDRIA—dioecious male plants with five ſtamina.

[6]DIOECIA HEXANDRIA—dioecious male plants with ſix ſtamina.

[7]DIOECIA OCTANDRIA—dioecious male plants with eight ſtamina.

[8]DIOECIA ENNEANDRIA—dioecious male plants with nine ſtamina.

[9]DIOECIA DECANDRIA—dioecious male plants with ten ſtamina.

[10]DIOECIA DODECANDRIA——dioecious plants with twelve ſtamina.

[11]DIOECIA POLYANDRIA——dioecious male plants with numerous ſtamina.

[12]DIOECIA MONADELPHIA——dioecious male plants with monadelphous or united ſtamina, being united by their filaments into a pillar or column, as in ſhrubby horſe-tail.

[13]DIOECIA SYNGENESIA—dioecious male plants with ſyngeneſious antheræ, i. e. with the antheræ or tops of the filaments united.

[14]DIOECIA GYNANDRIA—dioecious male plants with gynandrous ſtamina, or that are ſituated on a kind of ſtyle. See the Claſs GYNANDRIA.

*Twenty third Claſs.*

23. POLYGAMIA, of *many* and *marriage*, plants of a variety of ſexes, that is, hermaphrodite flowers, and likewiſe male or female flowers, or both on the ſame plant, or on diſtinct plants of the ſame genus; and from the different circumſtances of polygamia this Claſs is divided into three orders.

The orders are,

[1]POLYGAMIA MONOECIA—the polygamia all on the ſame plant.

[2]POLYGAMIA DIOECIA— the polygamia on two diſtinct plants.

[3]POLY-

[3]POLYGAMIA TRIOECIA—the polygamia on three diſtinct plants.

*Twenty-fourth Claſs.*

24. CRYPTOGAMIA, of *to hide* or *conceal* and *a marriage*, *a clandeſtine marriage*,—plants that have their fructifications either entirely concealed, or, from their minuteneſs or ſituation, are imperfectly viſible: ſuch are the ferns, moſſes, flags, ſea-weed or wrack, and muſhrooms, and of which the claſſic character is very imperfect, and the genera of courſe without any eſſential mark or diſtinction, ſo great is the obſcurity that ſtill prevails in this conſiderable part of the vegetable kingdom.

This Claſs of imperfect plants is divided into four orders or families, very different in their general habit.

The orders are,

[1]CRYPTOGAMIA FILICES—the *Filices* or Ferns.

This is a large tribe of plants, defined to be plants which bear their flower and fruit on the back of their leaves; but the flower and other parts of fructification are ſo minute, or imperfectly viſible, that they do not admit of any regular claſſic diſtinction. See FILICES.

[2]CRYPTOGAMIA MUSCI—*Muſci* or Moſſes.

This is alſo a large tribe of plants with imperfectly diſtinguiſhable fructifications: their chief characteriſtic diſtinction is—antheræ without filaments—male flowers, conſtituted by the preſence of the antheræ—the antheræ have, or are deſtitute of a *calyptra*—ſeeds intirely naked, being devoid of the cotyledon or cover, ſo exhibit the naked embrio. See MUSCI.

[3]CRYPTOGAMIA ALGÆ—*Algæ*, Flags or Sea-weed.

A numerous tribe of imperfect plants, whoſe root, ſtem, and leaf are all one, and their fructification imperfectly known.

[4]CRYPTOGAMIA FUNGI—*Fungi*, or Muſhrooms.

A very extenſive tribe of plants, whoſe fructification is ſtill entirely unknown. See FUNGI.

By the foregoing arrangement of the twenty-four Claſſes of the vegetable kingdom, and their reſpective orders, the ſtudent in gardening and botany will eaſily explain to himſelf the proper Claſs and order of all the different genera; eſpecially, as to each genus we have all along ſubjoined the name of the Claſs and order to which it belongs; obſerving, that all the different ſpecies and varieties of each genera or genus, are alſo all of the ſame Claſs and order.

CLEMATIS, Climber, or Virgin's-Bower, and Traveller's-Joy, &c.

This genus furniſhes ſeveral ſhrubby climbers of the flowery tribe, and two herbaceous, upright, flowery perennials, all of hardy growth; adorned ſome with winged, others with divided, and ſome with ſimple leaves; and all of them with quadripetalous flowers.

Claſs and order, *Polyandria Polygynia.*

*Characters.*] CALIX none. COROLLA, four oblong looſe petals. STAMINA, numerous awl-ſhaped filaments, with the antheræ growing to their ſides. PISTILLUM, numerous, roundiſh, compreſſed germina, ſubulated ſtyles, and ſimple ſtigmas. PERICARPIUM none. SEMINA, numerous roundiſh ſeeds, collected into a head, with the ſtyles adhering thereto.

The ſpecies are as follow.

The firſt ſeven ſpecies are ſhrubby climbers, having ſlender ſtalks and branches, climbing or mounting themſelves on ſupport by *cirrhus* or claſpers, many feet high.

[1]CLEMATIS *Viticella.*

*Viticella, or Virgin's-Bower Clematis.*] Clematis with ſhrubby climbing ſtalks, branching at every joint, and mounting upon ſupport fifteen or twenty feet high; compound and decompound leaves of many oval entire lobes, and numerous ſlender foot-ſtalks by threes, each ſupporting one flower, of different colours in different varieties.

*Varieties are*] Virgin's-Bower with ſingle blue flowers—ſingle red flowers—ſingle purple flowers—double purple flowers; all of them appearing in July and Auguſt.

This ſpecies and varieties obtain the name Virgin's-Bower, from their peculiar excellence in forming arbours or bowers, &c. they being admirable climbers, and often ſhoot ten or fifteen feet in one year, ſpreading their branches numerouſly every way, and very cloſely covered from bottom to top with leaves and flowers; but the double-flowered variety is the moſt beautiful, its petals being ſo numerous as to obliterate the fructification, and continues the longeſt in bloom. They are all well calculated for training over covered arbours, or rural ſeats, or againſt naked walls or other fences.

[2]CLEMATIS *Vitalba.*

*Vitis-alba, Great White Climber, Traveller's-Joy, and Old Man's Beard.*] Clematis with ſhrubby, tough, climbing ſtalks, very branchy and

and cirrhous, mounting upon ſupport twenty feet high, garniſhed with winged climbing leaves of five or ſeven heart-ſhaped lobes, and numerous bunches of white flowers, ſucceeded by compact cluſters of ſeeds, terminated by long white hairy plumes, hanging down like beards; hence ſometimes called Old Man's Beard.

It grows wild in England in hedges, mounting by its numerous claſpers over the buſhes and trees in its neighbourhood, ſpreading widely every way, that the hedges are often covered with its flowers in ſummer, and its white-bearded ſeeds in autumn and winter, appearing ſingular and ornamental, whereby, as growing abundantly by road ſides, affording entertainment to paſſengers, is alſo called Traveller's-Joy; it is rarely admitted in gardens, though a few plants, properly diſpoſed in large ſhrubbery-works, will have an agreeable effect as climbers.

[3]CLEMATIS *Viorna.*

*Viorna, or Virginian Purple Climber.*] Clematis with ſhrubby climbing ſtalks, branching and riſing on ſupport eight or ten feet high; compound and decompound leaves of nine nearly heart-ſhaped, ſometimes trifid lobes; and purpliſh-blue flowers, having thick coriaceous petals, appearing in July and Auguſt.

[4]CLEMATIS *Orientalis.*

*Oriental Yellow Climber.*] Clematis with ſhrubby climbing ſtalks and branches, mounting upon ſupport ſix or eight feet high; compound leaves of nine folioles, cut angularly into wedge-ſhaped lobes; and yellowiſh green flowers in April and May.

[5]CLEMATIS *Virginiana.*

*Virginian Ternate-leaved White Climber.*] Clematis with ſhrubby climbing ſtalks and branches, riſing on ſupport many feet high; ternate or trifolate leaves, of three heart-ſhaped, angular, lobated lobes, and white flowers.

[6]CLEMATIS *Criſpa.*

*Carolina Curled-flowered Climber.*] Clematis with ſhrubby climbing ſtalks, branchy, and riſing upon ſupport four or five feet high; ſimple and trifoliate leaves, the folioles in ſome entire, others divided into three lobes; and purple flowers, having thick curled petals, appearing in July and Auguſt.

[7]CLEMATIS *Cirrhoſa.*

*Cirrhoſe Evergreen Climber.*] Clematis with ſhrubby climbing ſtalks, very branchy, buſhy, and cirrhous, mounting upon ſupport ſix or eightfeet high; ſimple evergreen leaves, ſometimes biſid, and ſome cut into three lobes; and greeniſh flowers, appearing in winter.

The two following are herbaceous, and of upright growth.

[8]CLEMATIS *Recta.*

*Upright White Clematis.*] Clematis with fibrey perennial roots; upright annual ſtalks a yard high; winged oppoſite leaves of three or four pair of oval-ſpear-ſhaped entire lobes, terminated by an odd one; and at top of the ſtalks, white flowers in large panicles, appearing in June.

*Variety.*] Low upright white Clematis with large flowers.

[9]CLEMATIS *Integrifolia.*

*Upright Entire-leaved Blue Clematis.*] Clematis with fibrey perennial roots; upright annual ſtalks a yard high; large, ſimple, ſpear-ſhaped, entire leaves, growing oppoſite; and from the upper part of the ſtalks, many long naked foot-ſtalks, each ſupporting a large blue flower, appearing in June.

The flowers of all the ſpecies, in their natural ſingle ſtate, are compoſed each of four oblong petals, and in all the climbing kinds are remarkably numerous, ariſing from almoſt every part of the branches at the axillas of the leaves, ſucceeded, in ſeveral of the climbers, and both the upright herbaceous ſorts, with abundance of ſeed in autumn, growing in cluſtered heads, all of which, being furniſhed with long white plumes, have a ſingular appearance in autumn and winter.

All the ſpecies, both climbers and upright kinds, are very hardy, and proſper in any common ſoil of a garden, and in any expoſure.

The firſt ſeven ſorts are of climbing growth, and having durable ſtalks, but which being long, ſlender, and weak, muſt have ſupport either of trellis-work, ſtrong ſtakes, walls, paling, or hedges, &c. otherwiſe their branches will trail on the ground; ſo that they are proper to train over covered arbours, or againſt high naked walls, or the like; or may be introduced in large ſhrubbery or wood-works, here and there one, to run over the buſhes; and ſome may alſo be planted ſingly in large clumps between deciduous ſhrubs, placing tall ſtrong ſtakes for their ſupport.

Of theſe climbing kinds, the firſt ſort, Virgin's-Bower and varieties, have the greateſt merit for ornament, and are the ſorts that are principally known and cultivated in the Britiſh gardens.

The eighth and ninth ſorts are proper furniture

niture for any of the compartments of the pleaſure-ground, and they will ſucceed any where; they are particularly well calculated to occupy vacant ſpaces in the ſhrubbery clumps, where they will ſhew themſelves to great advantage.

*Propagation of all the Sorts.*

All the ſhrubby climbing kinds are propagated by layers, and ſome of them alſo by cuttings.

By layers: the young ſhoots of the ſame year are the proper parts for propagation, and if theſe are layed in ſummer, before they become woody, they will more certainly ſucceed; therefore, when the ſhoots of the year are two or three feet long, let the branches on which they grow be brought down and pegged in the ground; then lay all the young ſhoots in the earth, in the uſual way, with their tops three or four inches out, and by October moſt of them will be rooted, when, or in ſpring following, they may be tranſplanted into the nurſery.

This method of ſummer laying is more particularly neceſſary for the Virgin's-Bower and varieties, and moſt of the foreign climbers.

The Traveller's-Joy and Evergreen Climber, however, may be layed at any time; they will alſo grow by cuttings of the young ſhoots in ſpring or ſummer, though thoſe of the latter rather require aid of a hot bed; and the Evergreen ſort often ſend up ſuckers from the bottom, each of which, tranſplanted, becomes a good plant.

The two upright herbaceous ſorts are eaſily propagated, by dividing their roots in autumn, or early in ſpring. which multiply exceedingly, and may be divided every two or three years; every ſlip having a fibre at bottom, and bud at top, will readily grow.

Theſe two ſorts may alſo be raiſed from ſeeds, in a bed or border of common earth, ſown in autumn, or early in ſpring; and when the plants are a year old, they will produce flowers.

CLETHRA, *Clethra.*

There is but one ſpecies, a deciduous flowering ſhrub for the ſhrubbery.

Claſs and order, *Decandria Monogynia.*

*Characters.*] CALIX, monophyllous, five-parted, and permanent. COROLLA, five oblong petals, broadeſt towards the extremeties. STAMINA, ten filaments, and oblong erect antheræ. PISTILLUM, roundiſh germen, permanent ſtyle, and trifid ſtigma. PERICARPIUM, a roundiſh, trivalvular, trilocular capſule, lodged in the calix, and many angular ſeeds.

The ſpecies is,

CLETHRA *Alnifolia.*

*Alder-leafed American Clethra.*] Clethra with a ſhrubby ſtem, dividing into a branchy head four or five feet high; long, ſpear-ſhaped, ſerrated, alternate leaves; and at the ends of the branches long ſpikes of white flowers in July or Auguſt.

This is a very ornamental ſhrub, but more particularly during its bloom, and merits a place in every curious collection, allowing it rather a moiſt than dry ſoil.

It is propagated by ſeeds, layers, and ſuckers.

By ſeeds: theſe are procured from America, and ſown in pots of light earth, to move to ſhade in ſummer, and ſhelter in winter, becauſe the plants ſometimes do not come up till the ſecond ſpring. By layers: perform it on the young ſhoots in autumn; water them the following ſummer, and by autumn after they will be rooted, though it is ſometimes two years before that is accompliſhed. Suckers from the root may be tranſplanted in autumn or ſpring, being careful to take them up with fibres.

CLIFFORTIA, *Cliffortia.*

It furniſhes three evergreen African ſhrubs for the green-houſe, adorned with ſimple and trifoliate leaves, and apetalous flowers.

Claſs and order, *Dioecia Polyandria.*

*Characters.*] CALIX, male and female flowers on ſeparate plants, having cups compoſed of three oval acute leaves; thoſe of the females are permanent. COROLLA, no petals. STAMINA, numerous erect filaments in the males, and oblong, twin, compreſſed antheræ. PISTILLUM, in the females, an oblong germen under the calix, two plumoſe ſtyles, and ſimple ſtigmas. PERICARPIUM, an oblong, taper, bilocular capſule, crowned by the calix, and contains one ſeed.

The ſpecies are,

[1]CLIFFORTIA *Ilicifolia.*

*Ilex-leafed Cliffortia.*] Cliffortia with a ſhrubby ſlender ſtem, very branchy, and forming a diffuſed head four or five feet high; ſtiff leaves, heart-ſhaped at the baſe, broad and indented at the ends; and yellowiſh-green cloſe-ſitting flowers, growing ſingly.

[2]CLIFFORTIA *Ruſcifolia.*

*Ruſcus-leafed Cliffortia.*] Cliffortia with a ſhrubby

ſhrubby ſlender ſtalk, forming a branchy head three or four feet high; ſmall, ſpear-ſhaped, ſtiff, entire leaves, in cluſters; and between them looſe bunches of yelloviſh green flowers.

[3]CLIFFORTIA *Trifoliata.*

*Three-leafed Cliffortia.*] Cliffortia with a ſhrubby very ſlender ſtem, branching and forming a ſpreading head three or four feet high; trifoliate cloſe-ſitting leaves, having the middle lobe tridented, and yelloviſh-green flowers almoſt cloſe to the branches.

The flowers of all the ſpecies are apetalous, ſo make no great appearance, but are the moſt conſpicuous in the male plants, by their numerous, yellow, erect ſtamina.

All the three ſpecies, conſidered as evergreens, are very ornamental, and being natives of Æthiopia, require ſhelter here in winter; ſo muſt be kept in pots of rich light earth, and placed in the greenhouſe collection, giving plenty of water in ſummer, and but very ſparingly in winter.

Their propagation is generally effected by cuttings in this country, which muſt be young ſhoots of five or ſix inches length, planting them in pots in ſpring or ſummer, and plunge them in a hot-bed, they will readily take root.

They may alſo be propagated by layers in the ſpring.

CLIMBING PLANTS, plants whoſe ſtalks either aſcend ſpirally round any adjacent ſupport, or climb by means of claſpers or tendrils. See CIRRHUS.

Of Climbers, there are both herbaceous and woody plants, and which may be divided into three kinds, according to their mode of climbing; ſuch as Twining Climbers, Cirrhoſe Climbers, Paraſitic Climbers.

Twining Climbers; ſuch as have winding ſtalks *(caulis volubilis)* and which twiſt or aſcend themſelves ſpirally about any neighbouring ſupport, as ſcarlet kidney beans, hops, convolvulus major, and ſome ſpecies of honeyſuckle.

Cirrhoſe Climbers; ſuch that aſcend thro' means of claſpers, tendrils, or ſpiral ſtrings, iſſuing from the ſides of the ſtalks and branches *(cauli cirrhoſus)*, or from the foot-ſtalks of the leaves, and even from the leaves themſelves, ſo twiſt about any thing they encounter, whereby their ſtalks are ſupported and arrive at the height nature deſigned them: examples of this ſort are, almoſt all the pea tribe, cucumber, vine, paſſion-flower, traveller's-joy, *ſmilax*, or rough bindweed, and many other ſorts.

Paraſitic Climbers; theſe are alſo of the cirrhoſe tribe, but their cirrhi, or claſpers, plant themſelves like roots in the bark of the adjoining trees *(cauli paraſiticus)*, ſo the plant thereby ſupports itſelf like a paraſite, on other plants, and mount to their tops; ſuch as the ivy, radicant bignonia, woody night-ſhade, and ſeveral others: theſe ſort of Climbers alſo root in walls, pales, or any kind of buildings, and aſcend to their tops, if ever ſo high.

Many of the climbing and trailing tribe are very ornamental in gardens, both of the herbaceous and ſhrubby kinds; the following is a liſt of the principal ſorts.

Of the herbaceous kinds are, *convolvulus*, ſeveral ſpecies and varieties—everlaſting-pea—painted-lady-pea—*cynanchum*, ſeveral ſpecies—ſcarlet kidney-bean, and white varieties——naſturtium——gourd—hop-plant—*tamus*, or black briony—Cretan black briony—*brionia*, or white-briony—*ipomoea coccima*, or ſcarlet convolvulus, and ſome others.

All theſe herbaceous Climbers may be allowed places in large borders, placing ſticks for their ſupport, upon which moſt of them will naturally climb, and appear very ornamental in ſummer.

Some of the more aſpiring ſorts may alſo be placed to run over arbours, or any kind of rural ſeats in gardens.

Of ſhrubby kinds, or ſuch as have perennial ſtalks, are the following: radicant and evergreen *bignonia*—climbing *celaſtrus*—*clematis*, virgin's-bower, ſeveral ſpecies and varieties—*glycine*, or kidney-bean-tree of Carolina—ivy—honeyſuckle, many ſorts—*moniſpermum*, or moon-ſeed, two or three ſpecies—*paſſiflora*, or paſſion-flower—*periploca*, or Virginia-ſilk—*rubus*, or bramble, ſeveral ſorts—*ſmilax*, or rough bindweed—woody night-ſhade, two or three varieties—*vinca*, or periwinkle, many varieties—*vitis*, the vine.

All theſe ſhrubby Climbers, conſidered as plants of ornament, are proper furniture for ſhrubberies of any conſiderable extent, and may be employed different ways; ſome may be diſperſed about the clumps, detached from the other plants, ſo placing ſtrong tall ſtakes for their ſupport, and they will have a ſingular effect among the other ſhrubs; others may be ſtationed near hardy trees and large ſhrubs, and ſuffered to climb about their ſtems, or interweave in their branches, and aſpire to

their tops or extremities, and ſpread about in their natural way, when they will have a beautiful effect in forming rural variety; ſome may alſo be employed to ornament naked or unſightly walls of high buildings, and ſome for decorating or forming rural arbours, where there is lattice, or any kind of open-work, for the branches to climb upon, which, in many of the ſorts, will ſhoot ten or fifteen feet in a ſummer; ſo that an arbour may be formed in one ſeaſon.

But for particulars of the different ſorts, and their culture, ſee their reſpective genera.

CLUTIA, *Clutia.*

This genus furniſhes three ſhrubby-ſucculent evergreen exotics for the green-houſe and ſtove, garniſhed with ſimple leaves, and greeniſh-white quinquepetalous flowers.

Claſs and order, *Dioecia Gynandria.*

*Characters.*] CALIX, male and female flowers on ſeparate plants, having cups compoſed of five large, oval, concave leaves. COROLLA, five heart-ſhaped, ſpreading, permanent petals, and at the bottom five nectariums placed circularly; and in the males five ſmall ones within the others. STAMINA, five horizontal filaments, ſituated in the middle of a ſtyle, and roundiſh verſatile antheræ. PISTILLUM, in the males no germen, but a long ſtaminiferous ſtyle; in the females a roundiſh germen, and three bifid ſtyles, and obtuſe ſtigmas. PERICARPIUM, a globular, ſix furrowed, trilocular capſule, and three ſeeds.

The two firſt ſpecies are green-houſe exotics.

[1]CLUTIA *Alaternoides.*

*Alaternoide Æthiopian Clutia.*] Clutia with a ſhrubby ſtem, branching laterally and erect, forming a head ſix or eight feet high; very narrow, ſpear-ſhaped, cloſe ſitting, greyiſh, alternate leaves; and from their axillas, ſolitary, ſmall, greeniſh-white, erect flowers.

[2]CLUTIA *Pulchella.*

*Purſlane-leafed Æthiopian Clutia.*] Clutia with a ſhrubby ſtem, branching from the ſides erectly ſix or eight feet high; oval, entire, ſea green, alternate leaves, on foot ſtalks; and ſmall greeniſh-white flowers along the ſides of the branches.

The following is a ſtove exotic.

[3]CLUTIA *Eluteria.*

*Eluteria, or Indian Clutia,*] Clutia with a ſhrubby ſtem, branching erectly five or ſix feet high; heart-ſhaped-lanceolate, pointed, foot-ſtalked, alternate leaves; and flowers in ſpikes at the ends of the branches.

The flowers of theſe three ſpecies are formed each of five ſmall petals, appearing in June, July, and Auguſt, but are not very ornamental; ſo that the merit of the ſhrubs is in their beautiful evergreen leaves.

The two firſt ſorts are green-houſe plants, and the other is of the ſtove, ſo muſt always be kept in pots of light rich earth; though they will all ſucceed in the open air in ſummer, and being always green, they are very ornamental at all ſeaſons.

Their propagation is by cuttings in ſpring or ſummer, planting them in pots of light earth, and plunge them in a hot-bed, they will readily emit roots, and muſt be tranſplanted into ſeparate pots.

CNEORUM, Widow-Wail.

There is but one ſpecies, a low evergreen ſhrub for the ſhrubbery, adorned with ſimple leaves, and tripetalous flowers.

Claſs and order, *Triandria Monogynia.*

*Characters.*] CALIX is monophyllous, tridented, and permanent. COROLLA, three oblong, ſpear-ſhaped, erect petals. STAMINA, three ſhort filaments, and ſmall antheræ. PISTILLUM, a blunt trigonous germen, firm ſtyle, and trifid ſtigma. PERICARPIUM, a globular, trilobate, trilocular, dry berry, and three ſeeds.

The ſpecies is,

CNEORUM *Triccocum.*

*Triccocous Cneorum.*] Cneorum with a ſhrubby hard ſtem, divided low into a branchy buſhy head two or three feet high, cloſely garniſhed with oblong-oval, cloſe-ſitting, ſtiff leaves, two inches long, and half an inch broad; and from their axillas, towards the ends of the branches, yellowiſh flowers, growing ſingly, ſucceeded by triccocous, three-ſeeded, baccaceous fruit.

It flowers from May till October, and affords plenty of ripe ſeed.

This is a very ornamental little evergreen for the fronts of the ſhrubbery clumps, though it is ſometimes retained as a green-houſe plant; but this is needleſs, unleſs merely for the ſake of variety, for it will proſper freely in the full air the year round, obſerving to allow it a dry ſoil, in which it will endure the rigours of ſevere winters, better than in rich moiſt ground.

The propagation of this ſhrub is by ſeeds and cuttings.

By ſeeds: ſow them in a bed of common earth half an inch deep in October, and moſt of the plants will riſe the ſpring following, the

the largeſt of which, in the ſpring after, may be thinned out, and planted in the nurſery-way, and in two or three years they will be ready for the ſhrubbery, &c.

By cuttings: this may be done in ſpring, cutting or ſlipping off ſome of the former year's ſhoots five or ſix inches long; plant them in a pot of good earth, and plunge them in a hot-bed, they will ſoon root and ſet to growing: young ſhoots, planted in a ſhady border in July, or early in Auguſt, will alſo grow.

COCHLEARIA, Spoonwort, or Scurvy-Graſs, and Horſe-Radiſh.

The plants are herbaceous and hardy, and of which there are two ſpecies that merit culture; one of them a fibrous-rooted biennial for medicine; the other a carrot-rooted perennial, valuable for its root as an eſculent, well known by the appellation of Horſe-Radiſh.

It may to ſome appear ſtrange to ſee Horſe-Radiſh retained as a ſpecies of Scurvy-Graſs, but its general characters certainly declare it of that genus.

Claſs and order, *Tetradynamia Siliculoſa.*

*Characters.*] CALIX, four oval concave leaves. COROLLA, four oval, ſpreading, cruciforme petals. STAMINA, four long, and two ſhort filaments, and obtuſe compreſſed antheræ. PISTILLUM, a heart-ſhaped germen, ſhort ſtyle, and obtuſe ſtigma. PERICARPIUM, a heart-ſhaped, gibbous, compreſſed, bilocular pod, affixed to the ſtyle, and eight ſeeds.

The ſpecies of our gardens are,

[1]COCHLEARIA *Officinalis.*

*Common Officinal Scurvy-Graſs.*] Cochlearia with a fibrous root, crowned by a cluſter of round ſucculent leaves, hollowed like a ſpoon, and amongſt them branchy ſtalks ten or twelve inches high, garniſhed with oblong ſinuated leaves, and at the ends of the branches cluſters of ſmall white flowers.

It flowers in April and May, ſucceeded by plenty of ſeeds in June.

[2]COCHLEARIA *Armoracia.*

*Armoracia, or Horſe-Radiſh.*] Cochlearia with a long, thick, perpendicular, white root, crowned by large, ſpear ſhaped, erect leaves; and between them an upright ſtalk, garniſhed with ſmall jagged leaves, and terminated by white flowers.

The firſt ſort, *Cochlearia Officinalis*, is a medical herb, and its virtue reſides in the leaves and ſtalks. It may be conſidered both as an annual and biennial, and its propagation is by ſeed annually in ſpring or autumn, in any ſituation, ſowing it on the ſurface, and rake it in, which, if ſown in autumn ſoon after it ripens, i. e. in July, or beginning of Auguſt, the plants will riſe ſoon after; thining them to three or four inches, and they will ſtand the winter, and be fit for uſe in ſpring.

The ſecond ſpecies, *Horſe-Radiſh*, is in much eſteem for its eatable root, which is uſed raw, ſcraped into fine ſhreds, and is either uſed alone as ſauce to fleſh meat, or incorporated in ſallads, and is alſo uſed for garniſh to diſhes, &c.

It is a very hardy plant, is perennial in root, and its nature of growth is—The bottom of the root generally reſolves itſelf into a thick, knotty, durable ſtool, at a certain depth in the ground, and from which ariſe ſeveral erect root-ſhoots, advancing perpendicularly to the ſurface of the earth, which, after having one or two years growth, acquire a ſubſtance of one or two inches thickneſs, and that being taken up for uſe, the ſtool remaining ſends up a freſh ſupply the year following; therefore, in the culture of this plant, it is neceſſary to plant the roots twelve or fifteen inches deep in the ground, to form ſtools that depth under the ſurface, that they may ſend up long, ſtrait, regular ſhoots, which, ariſing in ſpring, continue encreaſing in ſubſtance till September or October, when, in rich ground, they probably will be large enough for uſe, i. e. about an inch thick; but if they are much ſmaller, permit them to have another ſummer's growth, obſerving, when you take them up, to trench the ground open to the depth of the ſtool; ſo cutting off the young ſhoots cloſe to the place from whence they proceed, always leaving the old ſtools undiſturbed, and they will furniſh you with a freſh crop, as above, annually.

The propagation of this plant is by roots, cuttings of which, taken from the top an inch or two long, or even any part of the root cut into ſets that length, each having an eye or bud, will readily grow and become a plant.

But although any part of the root will thus readily grow, the beſt ſets for planting are cuttings taken from the top of the roots with the head or crown to them, either of the principal roots, or their off-ſets or ſide-ſhoots, as alſo the ſmall off-ſets ariſing immediately

from

from the ſtools; therefore, when intended to make a freſh plantation, it is proper, according as the roots are taken up occaſionally for uſe, to reſerve a quantity of the largeſt off-ſets, and lay them in the earth till wanted; then cut the tops off for planting two or three inches long; the tops of the main roots may alſo, when taken up, be cut off an inch or two long, and preſerved as above for the ſame purpoſe; but this latter is only practicable in private gardens; for, if the kitchen-gardeners were to cut off the tops of their marketable roots, it would render them unſaleable; ſo, in this caſe, recourſe is commonly had to the off-ſets above deſcribed.

The ſeaſon for planting them is any time in open weather from November till ſpring, though I ſhould rather prefer the month of February or beginning of March, eſpecially in wet or ſtubborn ground.

As to the ſoil proper for their culture, obſerve, that although the plants will grow in almoſt any ſoil and ſituation, yet to have long ſtrait roots of conſiderable ſubſtance, a rich, moderately-light, deep ſoil, in an open expoſure, ſhould, where poſſible, be choſen, and which ſhould be regularly trenched two moderate ſpades deep, well breaking all large clods, that nothing may obſtruct the perpendicular growth of the roots.

The method of planting is:—the ſets or cuttings are to be planted in rows two feet deep, nine inches diſtance in the lines, and each cutting placed twelve or fifteen inches deep, for the reaſon already hinted, and may either be planted by dibber, after the ground is dug, or they may be trenched in, placing them in the bottom of the trenches as you proceed in trenching. But, firſt, of planting by dibber, which is the method I prefer for general practice: the ground being dug a due depth, as before directed, and the ſurface laid level, then begin at one end, and ſtrain a line croſs-ways the ground, and having a long dibber, make holes therewith fifteen inches deep, and nine aſunder, and as you go on, drop one ſet or cutting in each hole, with the top or crown upright, ſtriking in the earth upon them; one row being thus planted, move the line two feet farther, and plant another in the ſame manner, and ſo proceed to the end. Next, with regard to the method of planting by trenching them in:—The ground is to be trenched in the uſual way, beginning therefore at one end of the piece, and open a trench two ſpades wide, and one deep, and dig the bottom; then by line ſet a row of cuttings along the middle of the bottom nine inches diſtance, thruſting them up to their tops in the earth, and then dig the next trench the ſame width and depth, turning the earth thereof into the firſt upon the row of plants, breaking all large clods, and level the top; then digging the bottom of this ſecond trench, plant another row of cuttings as above, covering them with the earth of a third trench; and in this manner proceed till the whole is planted, levelling the ſurface as you go on in a regular manner.

When the whole is planted in either of the above methods, the ground may be ſown with ſpinach and radiſhes, or any ſlight-rooting temporary crop, that comes off early in ſummer, by the time the Horſe-Radiſh appears, which, as they have to ſhoot quite from the bottom, they rarely make their appearance the firſt year before the middle of May, when all other crops muſt be cleared off, and the ground hoed to deſtroy weeds, and the leaves of the Radiſh will ſoon cover the ground, and no further care will be required till the roots are fit to take up for uſe.

In October following you may examine the roots; ſometimes they will make ſuch progreſs, as to be large enough for uſe; but if they, however, are not greatly wanted, they will be in excellent order by that time twelvemonth.

When the roots are to be taken up for uſe, begin at the firſt row, and open a trench two feet wide, and as deep as the ſtool or bottom of the roots, but without diſturbing them; then with your knife cut off all the ſhoots, large and ſmall, of each ſtool, cloſe and level to the place from which they ariſe, leaving the ſtool in the ground; and when you have taken up all the plants of the firſt trench, then proceed to the next row; open another trench, turning the earth into the firſt, and cut off all the ſhoots of this row as before; and in like manner continue taking up the whole, according as they are wanted, and the ſtools remaining undiſturbed, they will ſend up a freſh ſupply of ſhoots for another year's ſervice, and after theſe another; and in that manner they will furniſh a ſucceſſion for many years, obſerving to take up the crops of each year as above directed.

But I would obſerve, that after the firſt and ſecond year, the ſtools ſpread at bottom, and ſend up many ſmall ſhoots between, and in

in the rows; therefore, to encourage the principal ſhoots, all the ſmall ſpawn ſhould be annually drawn up in May and June.

It is likewiſe proper to remark, that although the ſtools of theſe roots will endure many years, they will in time become weak, or worn out, as alſo the ſoil; therefore, in ſix or ſeven years, more or leſs, when you perceive the ſhoots come weak and inconſiderable, prepare to make a freſh plantation in another part of the garden.

COCOS, Cocoa-Nut-tree.

There is but one ſpecies, an exotic tree for the hot houſe, of the palm tribe, having no branches, but very large, long, branch-like, winged leaves.

Claſs and order, *Monoecia Hexandria.*

*Characters.*] CALIX, male and female flowers apart on the ſame plant, growing in a ſpadix, protruded from a general univalvular ſpatha, each flower of the ſpadix having a cup compoſed of three ſmall concave coloured leaves. COROLLA, each flower of the ſpadix compoſed of three petals. STAMINA, ſix filaments, and arrow-ſhaped antheræ. PISTILLUM, an oval germen, no ſtyle, but a trilobed ſtigma. PERICARPIUM, a very large, roundiſh, trigonous, leathery cover or drupe, incloſing a large, oval, hard nut, having three holes at the baſe.

The ſpecies is,

Cocos *Nucifera.*

*Nut-bearing Cocos, or Cocoa-nut-tree.*] Cocos with an upright, ſimple, branchleſs trunk, many feet high, garniſhed at top with large, branch-like, winged leaves, of many ſword-ſhaped lobes, folded back at the edges; and at top of the ſtem, long ſpadiceous bunches of flowers, ſucceeded by cluſters of very large, triangular, fibrous fruit, each containing a large oval nut, incloſing a white ſweet kernel, and a quantity of wholeſome milky liquor.

This tree is a native of India, where it obtains ſixty feet ſtature; and its branch-like leaves are often twelve or fifteen feet long, appearing like branches, there being no other.

It is retained here in our ſtoves as a curioſity, its large leaves effecting a ſingular appearance.

It is raiſed from the nuts, great quantities of which are annually brought to England by the Weſt-India ſhips; theſe, as ſoon as they arrive, are to be planted ſeparately in pots of rich earth, placing them ſide-ways, and directly plunge the pots over their rims in a bark-bed, and in ſix weeks they will germinate at the holes at the baſe, and will ſoon come up, giving frequent waterings, and continue them always in the ſtove, ſhifting them annually into larger pots, being careful at each removal to preſerve the ball of earth about their roots, and not to break the fibres.

COFFEA, Coffee-tree.

It conſiſts of one beautiful evergreen ſhrub for the hot-houſe, producing both flowers and fruit in England; and its fruit or berries is the Coffee.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX is ſmall, four-parted, and placed on the germen. COROLLA is monopetalous, funnel-ſhaped, tubular below, plane and five-parted at top. STAMINA, five filaments placed in the tube of the corolla, and linear incumbent antheræ. PISTILLUM, a roundiſh germen, ſingle ſtyle, and two thick reflexed ſtigmas. PERICARPIUM, an oval umbilicated berry, having two hemiſpherical ſeeds.

The ſpecies is,

COFFEA *Arabica.*

*Arabian Coffee-tree.*] Coffea with an upright brown ſtem, branching by pairs oppoſite, ten or twelve feet high, each pair croſſing that immediately below it, and diminiſhing in length upward, garniſhed with large oblong-oval, waved, oppoſite leaves; and at the ſides of the branches, cloſe-ſitting cluſters of pure white quinquefid flowers, ſucceeded by oval berries, ripening to a blackiſh colour.

This is a very ornamental evergreen ſhrub, a native of Arabia Felix and Æthiopia, and requires the temperature of a hot-houſe in this country; ſo muſt always remain in pots of rich light earth, and reſide conſtantly in that department, where it will continue its verdure beautifully the year round, produce flowers and ripe berries, and effect an ornamental appearance at all ſeaſons, but more particularly in autumn and winter, when furniſhed with fruit.

It is raiſed from ſeed, i. e. the berries; and thoſe produced here in our ſtoves will grow; obſerving, that as they ſoon loſe their germinative property, it is eligible to ſow them as ſoon as poſſible after they ripen. Let them be ſown in pots of light rich earth half an inch deep, and plunge the pots in the bark-bed, giving light ſprinklings of water once a week, and in about a month the plants will appear, which, when three inches high, prick into ſeparate ſmall pots, give a little water, and plunge them again in the bark-bed,

and

and afford them ſhade from the ſun till they have taken root, repeating the waterings moderately as you ſhall ſee occaſion, and give them air in common with the other exotics of the ſame department.

This tree is alſo ſometimes propagated by layers and cuttings, which, however, emit roots rather reluctantly; but it is worth the trial, planting them in pots of good earth, and plunge them in the bark bed, ſupplying them duly with water and occaſional ſhade.

The general culture of this tree in this country is—it muſt remain continually in the ſtove, have water two or three times a week in ſummer, and about once a week in winter, and freſh air admitted in common with the other exotics of the hot-houſe; and as it advances in growth, allow it larger pots in proportion. Likewiſe, every year or two ſhift it into freſh earth, obſerving, at each time of removal, to trim off all matted roots on the outſide of the ball, as alſo part of the old earth; then, placing the plant in the pot, fill it up with freſh compoſt, none better than good light kitchen garden earth, and directly give water, and plunge them in the bark-bed.

Cleanlineſs is alſo eſſential in the culture of this ſhrub here in our ſtoves; therefore, when it has contracted much duſt or filth, let all the branches and leaves be well waſhed.

Likewiſe obſerve, that as it is frequently attacked by inſects, particular attention is neceſſary when theſe appear, to waſh and clean every branch and leaf one by one, which ſhould be repeated as often as the vermin make their appearance; but if they are very numerous, it is a ſign of ill health and weakneſs in the plant, and it proceeds chiefly from the root; therefore, in ſuch a caſe, it is adviſeable alſo to ſhift the plant into entire freſh earth, and plunge it in the bark-bed; and when it recovers its health and vigour, the inſects will diſappear.

COLCHICUM, *Colchicum*, or Meadow-Saffron.

This genus furniſhes a beautiful collection of bulbous-rooted, very low, flowery perennials for the borders, poſſeſſing the ſingular circumſtance of their leaves appearing at one time, and their flowers at another; the former riſing long and narrow from the root in ſpring, and decay in June; and the flowers, which are monopetalous, long, tubular, ſix-parted, and erect, riſe naked; alſo from the root in autumn, not more than four or five inches high.

Claſs and order, *Hexandria Trigynia.*

*Characters.*] CALIX none. COROLLA is monopetalous, formed into a long tube, riſing directly from the root, widening and divided above into ſix ſpear-ſhaped, oval, concave, erect ſegments. STAMINA, ſix awl-ſhaped filaments, and oblong, incumbent, quadrivalvular antheræ. PISTILLUM, a germen buried in the root, three long ſlender ſtyles, and reflexed channelled ſtigmas. PERICARPIUM, a trilobate, trilocular capſule, having many roundiſh ſeeds.

The ſpecies are,

COLCHICUM *Autumnale.*

*Common Autumnal Meadow Colchicum.*] Colchicum with an oblong-roundiſh, dark-brown, bulbous root; erect plane leaves ſix inches long, and one or two broad; and flowers ariſing without foot-ſtalks directly from the root, having an erect tube three or four inches in length, widening above, and divided into ſix oval ſegments, in colour different in different varieties.

*Varieties are*] Common Autumnal Colchicum with ſingle purple flowers—double purple flowers—many-flowered purple—variegated purple—with white ſingle and double flowers—many-flowered white—white and red flowers—roſe-coloured ſingle and double flowers—variegated roſe-coloured flowers—red flowers—red and white flowers—yellow flowers—with broad leaves—ſtriped leaves.

[2]COLCHICUM *Montanum.*

*Mountain Spaniſh Colchicum.*] Colchicum with an oblong, roundiſh, very dark coloured, bulbous root; long, narrow, ſpreading leaves; and reddiſh flowers, riſing without foot-ſtalks directly from the root, having a long tube divided into ſix narrow ſegments, and yellow ſtamina.

*Variety.*] Mountain Colchicum with ſtriped red flowers.

[3]COLCHICUM *Variegatum.*

*Variegated Checquered Eaſtern Colchicum.*] Colchicum with an oblong, flattiſh, bulbous root; broad, waved, ſpreading leaves; and large flowers, riſing without foot-ſtalks directly from the root, divided into ſix long erect ſegments, beautifully checquered with red, white, and crimſon.

*Varieties.*] Variegated checquered Colchicum with double flowers—with plane leaves, and ſingle and double checquered flowers

The firſt of theſe three ſpecies, *Colchicum Autumnale*, in its ſingle purple ſtate, grows wild in many of our rich meadows; but which,

which, and all its varieties, being ſingularly ornamental, is alſo common in many curious gardens.

All the ſpecies and reſpective varieties are hardy, and are pretty autumnal ornaments for the fronts of flower borders; their nature of growth is, they produce their leaves commonly in ſpring, though thoſe of the ſecond ſort often riſe the beginning of winter, and thoſe of all the ſorts continue their growth till June, then totally decay, and the root in a manner remains dormant till Auguſt or September, when the flowers burſt forth from it entirely naked, without foot-ſtalk, calix, or foliage, each flower conſiſting of one leaf, formed into a long erect tube, from three to five or ſix inches long, ſtanding on the root, and divided at top into ſix oval erect ſegments; the lower tubular part ſupply the place of a foot-ſtalk to the upper diviſions, and when the flowers fade, the ſeed veſſels form within the ground, and ſlowly raiſe themſelves among the green leaves the following ſpring, and the ſeeds ripen in May or June.

Theſe plants may either be planted in beds by themſelves, in rows nine inches aſunder, or may be diſperſed in the fronts of the different borders; obſerving, in either method, they ſhould be planted three inches deep: and the ſeaſon either for procuring roots to plant, or to tranſplant thoſe already in your poſſeſſion, from one part of the garden to another, or into freſh beds, &c. is when their leaves decay in ſummer; and the beſt time is from the beginning or middle of June until the beginning of Auguſt, after which time they will ſoon emit new fibres, and ſhould not be removed, nor thoſe already up be kept longer out of ground, if you would have them flower in perfection the ſame autumn.

They ſhould be removed every two or three years at leaſt, when the bulbs will be encreaſed into large bunches, ſo ſhould be taken up and ſeparated. See BULBOUS-ROOTS.

Moſt of theſe bulbs are ſo hardy, that they will flower as they accidentally lie out of ground; but this greatly weakens them.

*Propagation.*

Their propagation is by off-ſets of the bulbs, of which they are very prolific, which are to be taken up and divided at the decay of the leaf in ſummer, as above hinted, planting the whole again before the middle of Auguſt.

New varieties are alſo obtained from ſeed, which ſhould be ſown in boxes, or large pots, in autumn, covering it a quarter of an inch deep, and place them in a warm ſituation till ſpring, when the plants will appear, which ſhould have only the morning ſun during ſummer, giving water in dry weather; and in the ſecond ſummer, when their leaves decay, plant them out in beds to flower.

COLUTEA, Bladder-Sena.

It furniſhes hardy deciduous flowering ſhrubs, and a ſhrubby flowery perennial, all of them adorned with winged leaves of many pair of lobes, and butterfly-ſhaped flowers growing in cluſters, and are elegant furniture for the ſhrubbery.

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX is monophyllous, bell-ſhaped, five-parted at top, and permanent. COROLLA is papilionaceous, varying in figure in different ſpecies. STAMINA, ten filaments, one of them ſeparating from the reſt, and ſimple antheræ. PISTILLUM, an oblong compreſſed germen, a riſing ſtyle, and a linear bearded ſtigma. PERICARPIUM, a large ſwollen bladder-ſhaped unilocular pod, having kidney-ſhaped ſeeds.

The botaniſts allow of but two or three diſtinct ſpecies, but of which there are ſome curious varieties.

The ſpecies of our gardens are,

[1]COLUTEA *Arboreſcens.*

*Tree Colutea, or Common Bladder-Sena.*] Colutea with an upright, woody, whitiſh ſtem, branching laterally, and divided upward into a branchy head twelve or fourteen feet high, garniſhed with winged leaves of four or five pair of oval-obcordated lobes, terminated by an odd one; and from the ſides of the branches, numerous ſmall cluſters of pale yellow flowers, ſucceeded by large bladder-ſhaped pods.

Varieties of this are the two following.

*Pocock's Tree Colutea.*] Colutea with an upright, woody, whitiſh ſtem, branching ſix or ſeven feet high; winged leaves, of ſeveral pair of oval obcordated lobes, terminated by an odd one; and deep yellow flowers.

*Oriental Tree Colutea.*] Colutea with a woody ſtem, branching ſix or ſeven feet high; winged leaves of ſeveral pair of oval-obcordated lobes, ending in an odd one; and blood-coloured yellow-ſpotted flowers.

[2]COLUTEA *Fruteſcens.*

*Shrubby Æthiopian Scarlet Colutea.*] Colutea with a ſhrubby ſtem, branching from the ſides erectly four or five feet high; winged leaves of ten or twelve pair of oblong-oval, hoary, whitiſh lobes, terminated by an odd

one; and at the upper part of the branches, many ſmall bunches of ſcarlet flowers, ſucceeded by large ſwollen pods.

The flowers of all the ſorts are of the pea-bloom, or butterfly kind, conſiſting each of a ſtandard, two wings, and a keel. See PAPILIONACEA.

They are all hardy enough to ſucceed in the ſhrubbery, but the ſecond ſpecies requires a warm ſituation; they flower abundantly in June and July, ſucceeded by numerous pods, furniſhed with ripe ſeeds, from which all the ſorts may be raiſed plentifully in the common ground.

The firſt ſort and its two varieties are very ornamental, both in their beautiful pinnated foliage, and their numerous flowers, in June and July, as well as their bladder-ſhaped pods an inch or two long, which produce an agreeable variety in autumn; all of which are proper ornaments for any of the ſhrubbery plantations, as they proſper freely in any common ſoil and expoſure, in common with other hardy flowering ſhrubs.

The ſecond ſpecies is a moſt elegant plant, and flowers beautifully in June and July, but is rather of tender quality, being impatient of ſevere froſt; ſo ſhould have a ſheltered ſunny ſituation, and dry warm ſoil, and is proper alſo to retain ſome in pots, to move to ſhelter of a green houſe, or deep frame, in winter; obſerving, as the plants, at any rate, are apt to go off in two, three, or four years, a ſupply ſhould be raiſed every year or two from ſeed, which when ſown early in ſpring, the plants often flower the ſame year in Auguſt and September.

*Propagation of all the Sorts.*

The firſt ſort and varieties are raiſed abundantly from ſeed, ſown in February or March half an inch deep, in a bed of common earth, and the plants will riſe freely, and be fit to tranſplant in nurſery rows in ſpring following, and in two or three years will be ready for the ſhrubbery.

They alſo grow by layers, layed any time in autumn, winter, or ſpring.

The ſecond ſpecies, *Colutea Fruteſcens*, is alſo raiſed from ſeed, ſown half an inch deep in a warm border in March or April, and when the plants are three inches high, tranſplant them, ſome in a ſheltered border, and ſome in pots, to move under ſhelter the following winter. But if you would have the plants forwarder, or to flower the ſame year, ſow the ſeed in pots, and plunge them in a hot-bed early in March, it will forward them conſiderably, that the plants will probably flower in July or Auguſt.

COMPOSITUS *Flos*, Compound Flower, i. e. compoſed of numerous floſculi, or ſmall florets in the ſame calix, as in daiſy and ſunflower.

All Compound Flowers are aggregate. See AGGREGATUS.

A compound flower is defined to be formed of an aggregate, or union, of ſeveral diſtinct fructifications, or many ſmall florets, or leſſer flowers, within one common cup or calix, and each floret furniſhed with a proper fructification, either all hermaphrodites, or males and females, or hermaphrodites or males in the diſc or middle, and females in the radius or circumference, and all the hermaphrodites having each five ſtamina, and theſe always united by their antheræ or tops into a cylinder, through which paſſes the ſtyle, crowned by divided ſtigma, having both the diviſions or ſegments revolute, or rolled back, and each floret ſucceeded by a ſingle naked ſeed, which is either coronated with down, &c. as in dandelion; or the crown is wanting, as in ſunflower.

Examples of Compound Flowers, are daiſy, feverfew, marigold, ſunflower, aſter, chryſanthemum, hawk-weed, centaury, African marigold, dandelion, and many others; all of which are formed of many florets in one common cup, as above deſcribed.

All Compound Flowers, which are a numerous tribe, are of the claſs *Syngeneſia*. See CLASSIS.

The other general properties of a Compound Flower are,

The common or general calix is formed either of one ſeries of leaves, immediately ſurrounding the receptacle and floſcules or florets, or of a double ſeries, frequently a leſſer and a greater, and is ſometimes imbricated, i e. formed of many ſcales.

The leſſer flowers or florets that form the Compound Flower are univerſally monopetalous, i. e. of one petal, ſitting cloſe upon the receptacle, and are of different figures and ſizes in different genera; and under each floret is generally placed a ſingle ſeed.

The compound flowers have different appellations, according to the form, or figure, and ſituation of the florets of which it is compoſed.

They

They are generally diſtinguiſhed by the following appellations.

Tubular Compound Flower, (*tubuloſus*, or of hollow florets); all the florets that compoſe the flower are tubular and funnel ſhaped, that is, hollow almoſt from bottom to top, and divided into five ſpreading parts at the brim, and which kind of florets, when they compoſe entirely the whole Compound Flowers, are moſtly all hermaphrodites, having each five ſtamina and a ſtyle; though there are tubular male and female florets, common to ſome genera; alſo hollow neutral florets.

Ligulated Compound Flower, (*ligulatus*, flat or ſtrap-ſhaped florets); the florets that compoſe the flower are all plane, flat, and expanded, and reſemble a ſtrap, fillet, or tongue, and are either entire at top, or divided into three or five parts, and which kind of florets, when they form entirely any compound flower, are commonly all hermaphrodites, and have each its five ſtamina, ſtyle, and naked ſeed, as in hawkweed, dandelion, and many other genera; but there are alſo ligulate male and female florets, ſometimes in the ſame or different flowers.

Radiated Compound Flower, (*radiatus* or *radius*, a radiated margin or circumference); having one, two, or more ſeries of long flat florets placed round the margin or outward part, in form of a ray, or reſembling the rays proceeding from the body of the ſun, as in ſunflower; and the diſc (*diſcus*), or central part, is formed by numerous ſmall tubular florets, exemplified alſo in ſunflower, marigold, &c. In moſt radiated compound flowers, the radius is generally formed of ligulated or plane florets, as in ſunflower and marigold juſt mentioned, and are commonly all females or neuterals; and the tubular florets in the diſc are generally all hermaphrodites or males; but in ſome genera the radius is formed by long tubular florets, unlike thoſe in the centre, as in centaury or blue-bottle; and in ſome the florets in the radius are naked, that is, without petals altogether.

It is moſtly to be obſerved, that both tubular and flat florets, in all Compound Flowers that are not radiated, are generally all hermaphrodite.

And in radiated Compound Flowers, the florets which occupy or form the diſc, are, for the general part, all hermaphrodite or male; and the ſemi, or other florets, that conſtitute the rays, are moſt commonly females or neutrals.

Neutral florets are ſuch as want both ſtamina and ſtyle, and are of no ſex, or neuter.

Naked florets are ſuch that have no petal or corolla.

But Compound Flowers are conſtituted ſeveral ways; as,

Tubular hermaphrodite florets, both in the diſc and radius.

Tubular hermaphrodite florets in the diſc, and tubular females in the radius.

Tubular hermaphrodites in the diſc, and tubular neutrals in the ray.

Tubular hermaphrodites in the diſc, and ligulate hermaphrodites in the radius.

Tubular hermaphrodites in the diſc, and ligulated females in the radius.

Tubular hermaphrodites in the diſc, and ligulated neutrals in the ray.

Tubular hermaphrodites in the diſc, and naked females in the radius.

Tubular male florets in the diſc, and naked females in the rays.

Ligulated hermaphrodites both in the diſc and radius.

As to the number of florets in a Compound Flower, they are generally very numerous and indeterminate.

In ſome genera the florets of the Compound Flower have ſmall diſtinct cups within the larger, and belong to the fifth order of the claſs *Syngeneſia*.

### *Of Double Compound Flowers.*

Plenitude or doubleneſs in Compound Flowers is effected different ways.

As, for example, radiated Compound Flowers, which generally have plane florets in the margin, and tubulars in the diſc, is rendered double two different ways; that is, the plenitude may either be effected by an encreaſe of the radius, and an almoſt total excluſion of the tubular florets in the diſc, or is effected by an elongation of the hollow florets in the centre, and a leſs profound diviſion of their brims. In the firſt mode of impletion, which is termed impletion by the radius, it is evident that a radiated flower, rendered double by the radius, will be either almoſt entirely female florets, as in feverfew and African marigold; or of neutral florets, as in ſunflower: and in the ſecond mode of impletion, termed impletion by the diſc, the florets of that part are extended to a great length, and thoſe of the radius, though they ſometimes remain unchanged, moſt commonly adopt the figure of thoſe of the diſc, without, how-

ever, ſuffering any alteration in the point of ſex; daiſy, feverfew, and African marigold, exhibit inſtances of this, as well as the former mode of impletion.

The impletion of tubular Compound Flowers ſeem to obſerve the ſame rule as that of the radiated flowers juſt delivered.

COMPOSTS. In gardening, Compoſts are compounds or mixtures of ſeveral earths, or earthy ſubſtances, and dungs, either for the improvement of the general ſoil of a garden, or of that for ſome particular plants.

Almoſt every plant in nature may be ſaid to have ſome particular favourite ſoil, and yet there is hardly any plant or tree but what will proſper in common garden earth; and even the moſt delicate plants of our green-houſes, ſtoves, and hot-beds, are found to ſucceed in common rich light mould, of the quality of that of a good kitchen garden; ſo that none need be at any great loſs on the conſideration of Compoſts. I would obſerve, however, that many kinds of plants may be farther improved by Compoſts adapted to the ſoil of their natural growth; but, on the other hand, would be underſtood to mean, that only a few different Compoſts is neceſſary for all the known plants in the world, which we can affirm for the ſatisfaction of the unexperienced, and not perplex them with tedious directions in every genus, for preparing expenſive and troubleſome Compoſts for every ſpecies thereof, which is altogether unneceſſary.

But there are ſome authors on gardening particularly profuſe and tedious in the article of Compoſts, frequently preſcribing a different one for almoſt every different plant, which too, are often of ſo ſtrange compoſition, and ſeem loaded with ſuch inconveniencies, trouble, and expence, in their preparation, as is ſufficient to diſhearten the unexperienced from attempting any thing in the vegetable world; as, for example, in Hill's works we may ſee directions for two or three hundred different Compoſts, and, as juſt obſerved, moſt of them too of ſuch uncommon compoſition, of ſo many different ſtrange ingredients, as to be conſiderably beyond the limits of general practice; nor would there be any end of the trouble and expence, which, after all, would be unneceſſary, and of no more ſervice to the plants than they might receive from a few well-prepared Compoſts of more practicable ſtructure, or even from common garden earth.

I therefore have found ſuch a multiplicity of compoſition entirely unneceſſary and perplexing, becauſe it is well known to obſervant practitioners, that a ſoil proper for every plant may be imitated in three or four principal Compoſts.

As, for inſtance, a rich moderately light Compoſt, of the texture of kitchen-garden earth, is agreeable to moſt plants. A looſe light Compoſt for ſome particular plants; a dry, ſandy, rubbiſhy, Compoſt for others, ſuch as moſt of the ſucculent tribe; and a loamy fattiſh Compoſt, of a pliable mouldery temperature, is particularly well adapted to moſt ſorts of trees and ſhrubs, and indeed to moſt plants that are not ſucculent.

But prepared Compoſts are principally in practice for plants in pots, and for ſome curious flowers in beds, and tender plants in hot-beds, &c.

In reſpect, however, to Compoſts, for the amendment of the general ſoils of a garden, ſeveral ſpecies of earthy ſubſtances may be employed, according as the quality of natural ſoil ſhall require; as, for inſtance, if the natural ſoil is of a very light, looſe, or ſandy quality, it may be aſſiſted occaſionally by the addition of heavy ſubſtances, ſuch as loam, and any kind of fattiſh earth, mud of ponds and ditches, with plenty of rotten dung; on the other hand, heavy, clayey, and all ſtubborn ſoils, may be meliorated by light Compoſts, i. e. any light ſandy earth, drift and ſea-ſand, the ſhovellings of turnpike-roads, the cleanſing of ſtreets, all kinds of aſhes, rotten tanner's-bark, rotten wood and ſaw duſt, and other ſimilar light opening materials that can be moſt conveniently obtained, adding to any, or all of them, a convenient portion of dung.

As to Compoſts for particular curious plants, to be preſerved in pots or tubs, beds, &c. the following are in practice.

One principal Compoſt in practice is, freſh or maiden earth from a paſture-ground, that is, of a light, but fattiſh mouldery temperature, and if it inclines to loam of a pliable texture, it will be an advantage; however, of any fat pliable paſture earth, take the top ſpit turf and all, and to which add about one third or fourth part of thoroughly rotten dung, and lay the whole in a long heap or ridge a yard high, in a ſituation expoſed to the ſun and air, to lie a year, turning it over ſeveral times, that the whole may be converted to mould, and the parts properly incorporated; and this will be found to anſwer almoſt every purpoſe

purpoſe of vegetation. But in default of good paſture earth, which is ſometimes inconvenient to be obtained, a quantity of good garden mould, of the above quality will anſwer very well; but more particularly that which has been well cultivated by proper manure, which may at all times be procured from the quarters of the kitchen garden: add thereto one third or fourth part of rotten dung, none better than that of old hot-beds; and if the mould is rather of a ſtiff nature, add alſo about a fourth part of ſea, or driſt ſand, or, for want of theſe, aſhes, or rotten tan, &c. caſting the whole in an heap, to lie five or ſix months, but if a year the better, ſtirring it over ſeveral times, as above directed.

Another Compoſt in uſe is, that for plants that particularly require a more light looſe ſoil; a Compoſt may be formed of one half good light paſture mould, or that of a garden, and about one third part of ſand, and another of rotten dung, forming the whole in a heap as above.

For plants that require a ſoft looſe rich earth, uſe for Compoſt good light rich earth of a garden or paſture, rotten tanner's bark, or rotten earthy wood, ſaw-duſt, tree leaves, rotten dung, and a ſmall portion of ſand.

For plants that delight in dry rubbiſhy ſoils, as the ſucculent tribe, form a Compoſt of one half of perfectly light garden or paſture mould, and one half of ſand or road ſoil, and a little ſcreened lime rubbiſh, laying the whole in a heap for a year, and turn it four or five times; which Compoſt may be made lighter or heavier, according as the plants are more or leſs ſucculent.

A loamy Compoſt, as already hinted, is a favourite ſoil of numbers of plants; that is, though moſt plants will flouriſh in any kind of good earth, or the Compoſts before-mentioned, yet that of a light, warm, loamy temperature, is found to improve the culture of almoſt all ſorts of plants, but more particularly all the tree and ſhrub kind; this Compoſt is thus prepared; maiden or freſh loamy earth from a common, or any dry paſture-ground, where the ſoil is of a ſoft and moderately light pliable nature (ſee LOAM), taking the uppermoſt ſpit, ſward and all, chopping it to bits, and add thereto rotten dung, as before directed, which, after lying in a ridge or heap twelve or fifteen months to rot the ſward, and by frequent turnings over to break the clumps, and mix the parts, will be excellent for uſe; when, if neceſſary, it may either be made lighter by the addition of ſome of the fore-mentioned light materials, or made heavier by a mixture of fat garden earth, according as the nature of particular plants ſhall require, which will be always hinted in the culture of the reſpective articles, whether in pots, beds, or borders.

The floriſts are generally curious in their compoſitions for their fine prize flowers; the following are their auricula and hyacinth Compoſts, but which will alſo anſwer for almoſt all other curious flowers.

For auriculas, the favourite Compoſt is, light earth from a paſture ground, the top ſpit with the ſward, and neats dung, of each an equal portion, and about half the quantity of driſt or ſea-ſand, and, when it can be had, a little rotten willow earth, or any rotten earthy wood, or old rotten tan or ſaw-duſt, forming the whole in an heap for a year, turning it over ſeveral times at proper intervals.

This Compoſt is alſo proper for many other curious flower plants, ſuch as the fine carnations, curious ranunculas, and anemonies; and for which, to make it go farther, you may add a quantity of good garden mould; obſerving, however, that though theſe flowers often excel in the above Compoſt, yet I have obſerved them flower almoſt equally well in common rich light garden earth.

For the hyacinth, the favourite Compoſt is different from the above, though that will anſwer tolerably well, as will alſo ſome of the other light Compoſts, and they even often proſper well in good garden earth; however, curious floriſts, to blow that delightful flower in its higheſt perfection, often uſe the following Compoſt—Neats dung and driſt ſand, of each an equal portion, and half the quantity of old rotten tan, and where it can be eaſily procured, the ſame portion of rotten leaves of trees, or, in lieu thereof, add a little more rotten bark, and a little very light earth from a paſture or garden; let the whole be mixed in a heap, to lie at leaſt a year, giving it frequent turnings; but if it remains in the heap eighteen months, or two years, it will be an advantage.

Of one or other of all the above Compoſts you ſuit all ſorts of plants ſufficiently, of which directions are given in the culture of all the reſpective articles; and any of the ſorts of Compoſt may always, upon occaſion, be eked out by an addition of garden earth, in proportion to the intended temperature of each reſpective Compoſt.

But where any particular Compoſt is neceſſary,

ceſſary, it is exhibited in treating of the culture of the reſpective articles.

In all Compoſts where ſand is neceſſary, ſea or driſt-ſand is to be preferred, and that which is dug out of pits is the moſt improper of all; therefore, where ſea-ſand cannot be eaſily obtained, which is rather the beſt, always chuſe driſt-ſand, or that taken near the ſurface.

Likewiſe in Compoſts where rotten earthy wood is requiſite, that of old rotten willow trees, or any other that can be had, will do; or, in default thereof, old rotten tanner's bark may be ſubſtituted, and is a very proper ingredient; alſo all ſorts of wood ſaw-duſt may be uſed.

In uſing garden mould occaſionally for compoſitions, the places of the quarters from whence it is taken, may readily be made good by a due ſupply of manure, and the emptyings of pots of old earth, and old flower-beds, &c. which being wrought up together with the natural ſoil, will be excellent for the growth of kitchen vegetables.

All Compoſts ſhould be formed in an open expoſure, free to the ſun, air, rains, froſts, &c. to meliorate and fertilize the ſoils; and the ingredients ſhould be formed in an heap, not in a large and high one, but rather extended in length like a ridge, about a yard or four feet thick, ſo that the rays of the ſun may penetrate through it: once every two or three months, at leaſt, it ought to be turned over, and the bottom thrown to the top, that all the parts may be well mixed, and equally participate of the influence of the ſun and elements; this is ſo eſſential, that if the heap is not thus expoſed, the Compoſt would be far from effecting the propoſed advantage to the plants, and would to many ſorts rather prove detrimental, that it would be more eligible to uſe common garden mould immediately from a well-cultivated border or quarter.

It is neceſſary that all Compoſts for plants in pots, tubs, &c. alſo for all tender plants in hot-beds and flower-beds, ſhould remain a year in the heap or ridge before it is uſed, eſpecially thoſe Compoſts formed of freſh earth and other new materials, which ſhould always have a ſummer's ſun and winter's froſt, and frequent ſtirring, for the whole ſhould be perfectly meliorated, and converted to a pure mould.

When the Compoſts are to be uſed, it is not adviſeable to ſcreen them, except for ſome particular purpoſes, which are hinted in different parts of the work; ſo that, for general uſes, the ſoil ſhould only be broken fine with the ſpade and hands, for, when fine ſcreened or ſifted, it becomes too compact for the roots of plants.

The term *maiden* or *virgin* earth, often mentioned for Compoſts, ſignifies that of any common, or other paſture ground, that have never been ploughed for the production of other crops, or, at leaſt, that have been a long time in paſture.

CONIFERÆ, Coniferous, or Cone-bearing; plants which bear that kind of fruit or ſeed-veſſel, called a Cone. See CONUS and STROBILUS.

The plants of this tribe are moſtly of the tree and ſhrub kind, and retain their leaves all the year, except ſome ſorts of larch, which loſe their leaves during the winter.

The principal genera of the Coniferous tribe are, the *pinus*, or pine-tree, including fir, larch, and cedar of Lebanon—the *cupreſſus*, cypreſs-tree—*Thuja*, arbor-vitæ—*ephedra*, ſhrubby horſe-tail—*juniperus*, juniper-tree, including ſavin, and ſeveral ſpecies of cedars. The height of ſome ſpecies of *juniperus* do not exceed two feet, that of ſome ſpecies of *pinus* approach to a hundred; their form is generally conical, and extremely beautiful, from the diſpoſition of their branches, which ſurround and cover the ſtem even to the root, and extend themſelves horizontally and circularly, like ſo many rays.

Moſt of the Coniferous trees are reſinous, or gummy; theſe gums have a bitter taſte, but very agreeable ſmell, and it is ſaid, plantations of them are exceeding wholeſome, by meliorating the air by their balſamic and aromatic exhalations, beſides being beautiful to behold.

From the larch-tree is extracted what we erroneouſly call Venice turpentine; from the wild pine, or pineaſter, is extracted the common turpentine, and from which is diſtilled the oil of that name; the dregs of the diſtillation is the common roſin: the pitch-tree, a ſort of fir, produces the ſubſtance from whence it derives the name. The branches of the black and white ſpruce-firs are uſed by the Americans in making their ſpruce-beer; the leaves of the common ſavin are uſed by farriers for deſtroying worms in horſes. A decoction in milk of the ſeeds of pineaſter, or of the extremities of the branches pulled in ſpring, is ſaid, with a proper regimen, to cure the moſt confirmed and inveterate ſcurvy.

All

All the ſorts are hardy and valuable plants in ornamental gardening, and many of them moſt valuable timber trees, particularly the genus *pinus*; none are more ornamental when growing, or turn to more profit when felled, for they arrive to great height and magnitude, and, as timber, are ſuperior for moſt kinds of buildings, and moſt excellent for maſts of ſhips.

The timber of the horizontal cypreſs is ſaid to reſiſt worms, moths, and all putrefaction, and to laſt many centuries; the doors of St. Peter's church at Rome were originally of this material, which, after laſting eleven hundred years, diſcovered not the leaſt tendency to corruption.

But for the culture, and other particulars of the Coniferous trees, ſee their reſpective genera.

CONVALLARIA, Conval-Lily, or Lily of the Valley, and Solomon's-Seal.

This genus conſiſts of hardy, herbaceous, flowery perennials, producing annual ſtalks from ſix inches to a yard in ſtature, adorned with oblong ribbed leaves, and monopetalous, ſmall, bell-ſhaped flowers, and are eligible furniture for the pleaſure-ground.

Claſs and order, *Hexandria Monogynia*.

*Characters.*] CALIX, none. COROLLA, monopetalous, bell-ſhaped, ſix-parted, and ſpreading at the brim. STAMINA, ſix filaments inſerted into the corolla, and erect antheræ. PISTILLUM, a globular germen, ſlender ſtyle, and obtuſe trigonous ſtigma. PERICARPIUM, a round trilocular berry, and ſingle ſeed.

The ſpecies of our gardens are,

[1]CONVALLARIA *Majalis*.

*Lily of the Valley, or May Lily.*] Convallaria with a fibrous creeping white root, crowned by oblong, erect, longitudinally-veined leaves, in pairs, five or ſix inches long, and one or two broad, and among them naked flower-ſtalks half a foot high, garniſhed with drooping white flowers, ranged in a ſingle ſeries on one ſide the ſtalk.

*Varieties.*] Lily of the Valley with ſingle white flowers—double white flowers—red flowers—purple and white ſtriped flowers—double purple and white flowers.

This ſpecies and varieties grow naturally in woods and ſhady places, in many parts of Britain, and other parts of Europe; but all of them poſſeſs great merit as flower-plants for ſhady borders, and the compartments of wilderneſs works, and the like, though they will ſucceed any where; and thoſe of the double and ſtriped kinds, particularly, are very beautiful.

[2]CONVALLARIA *Polygonatum*.

*Polygonatum, or Common Solomon's-Seal.*] Convallaria with a thick, knotty, fleſhy, fibrated, white root; upright, two-edged, firm ſtalks, two feet high, garniſhed with oblong-oval, ribbed, alternate leaves, their baſe embracing the ſtalk; and from their axillas, ſhort divided foot-ſtalks, each ſupporting one drooping white flower.

*Varieties.*] Common Solomon's-Seal with ſingle white flowers—double white flowers—ſweet ſcented white flowers—with purple ſtalks and white flowers.

This and varieties, as well as an ornamental plant in gardens, are of medical property, and its root is the part chiefly uſed, being frequently applied as a poultice to green wounds and bruiſes, and a decoction of the plant cures the itch.

[3]CONVALLARIA *Multiflora*.

*Multiflorous Solomon's-Seal.*] Convallaria with a thick, jointed, fibrated, white root; upright taper ſtalks near a yard high, garniſhed with broad, oblong-oval, alternate leaves, embracing the ſtalks with their baſe; and from their axillas, ſhort foot-ſtalks, ſupporting many greeniſh-white flowers.

*Varieties.*] Large Broad-leaved Multiflorous Solomon's-Seal with ſingle and double flowers—Dwarf Multiflorous Solomon's-Seal with ſtriped leaves.

[4]CONVALLARIA *Racemoſa*.

*Racemous-flowered Solomon's-Seal.*] Convallaria with a thick, knotty, fibrated root; upright ſtalks two feet high; oblong, pointed, ribbed, cloſe-fitting, alternate leaves; and the ſtalks terminated by racemous ſpikes of greeniſh-white flowers.

[5]CONVALLARIA *Verticillata*.

*Verticillated Narrow-leaved Solomon's-Seal.*] Convallaria with a thick, jointed, fibrated, white root; upright angular ſtalks two feet high; long, narrow, ſmooth leaves, in a verticillus or whirl round the ſtalks; and from the places of the leaves, ſhort foot-ſtalks, each ſupporting four or five ſmall whitiſh flowers.

The flowers of all theſe ſpecies are monopetalous, bell, or funnel-ſhaped, rather ſmall, and divided at the brim into ſix ſpreading ſegments, appearing in May and June, ſucceeded by round berries, furniſhed with ripe ſeeds in autumn.

They are all perennial in root, but the ſtalks and

and leaves are annual, riſing in ſpring, and periſh in autumn.

All the ſorts are hardy, and delight in ſhady places, ſo are well calculated as ornamental furniture for the borders of wood-walks, wilderneſs-quarters, and ſhady borders, where they will appear very ornamental both in their ſingular growth, foliage, and flowers, but all the ſorts will alſo grow in almoſt any ſituation, and multiply exceedingly by their creeping roots; and all the culture they require is, to have the ground dug between them annually, in common with the other plants, and to cut down their decayed ſtalks, and every three or four years to reduce their roots within due compaſs.

*Propagation.*

The propagation of all the ſorts is effected abundantly by dividing or ſlipping their roots any time from autumn till ſpring, though thoſe divided and planted out in autumn will flower ſtrong the following ſummer; the ſlips may be planted at once where they are always to remain, and they need not be removed oftener than every three or four years, when, if they are greatly encreaſed, it is proper to reduce them within due bounds.

CONVOLVULUS, *Convolvulus*, Bind-weed, or Bear-bind.

This genus compriſes many herbaceous twining and trailing plants, annuals and perennials, of which there are ſome of very flowery growth, and proper ornaments for the pleaſure-ground, and one or two for the green-houſe, all of them adorned principally with ſpear and heart-ſhaped leaves, and large open bell-ſhaped flowers.

This genus derives the name, *Convolvulus*, from *convolvendo*, i. e. rolling round, or twining about, as moſt of the plants wind and aſcend ſpirally round any ſupport.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX is monophyllous, oval, five-parted at top, and permanent. COROLLA is monopetalous, large, bell-ſhaped, and ſpreading. STAMINA, five ſhort filaments, and compreſſed antheræ. PISTILLUM, a roundiſh germen, ſlender ſtyle, and two broad oblong ſtigmas. PERICARPIUM, a roundiſh capſule, having ſeveral roundiſh ſeeds.

There are upwards of thirty ſpecies, but not a quarter of them have merit in gardening, and ſome are common and very troubleſome weeds, ſuch as the Trailing Field Bind-weed, and the Large Volubilate White Bear-bind, both of which are ſpecies of *Convolvulus*; the latter, in particular, is often very troubleſome in gardens in ſummer, by its winding ſtalks, which twine about any thing they encounter, either along the ſurface of the earth, or aſcend ſpirally about tall plants or trees ten or fifteen feet high.

The ſpecies of this genus, therefore, that merit culture, are principally for ornamental purpoſes; and the following are the moſt material ſpecies of our gardens.

The firſt three are hardy herbaceous annuals.

[1]CONVOLVULUS *Tricolor.*

*Tricolor Convolvulus, commonly called Convolvulus Minor.*] Convolvulus with proſtrate branchy ſtalks two feet long, trailing on the ground, garniſhed with ſpear-ſhaped-oval, cloſe-ſitting leaves; and at their axillas, long foot-ſtalks, each ſupporting one large, tricoloured flower, blue, having a white and yellow flower.

*Varieties.*] Convolvulus Minor with blue flowers, having white bottoms—with white flowers—variegated blue and white flowers.

This ſpecies and varieties are very floriferous annuals; the ſtalks generally proſtrate themſelves along the ground, without any twining or climbing property, ſpreading their branches every way, flowering at every joint from June till September.

[2]CONVOLVULUS *Purpurea.*

*Purple Convolvulus Major.*] Convolvulus with twining, ſpirally aſcending ſtalks and branches, winding about ſupport ſix or eight feet high, adorned with roundiſh, heart-formed, entire leaves; and from the ſides, erect foot-ſtalks, ſupporting large open purple-coloured flowers.

*Varieties.*] Convolvulus Major with deep purple flowers—red flowers—blue flowers—white flowers.

Theſe varieties are very flowery and beautiful annuals, and if their ſtalks have ſupport to climb upon, they will flower at every joint from July till October, ſucceeded by abundance of ripe ſeed.

[3]CONVOLVULUS *Nil.*

*Anil, or Deep Blue Convolvulus Major.*] Convolvulus with twining ſtalks and branches, mounting about ſupport ſix or eight feet high, garniſhed with heart-ſhaped, three-lobed, hairy leaves, and long axillary foot-ſtalks, each ſupporting two large deep blue flowers.

This is an exceeding beautiful annual, requires ſupport to climb upon, and will exhibit a fine bloom from Auguſt till October.

The

The two following are ſhrubby perennials of the green-houſe.

[4]CONVOLVULUS *Canarienſis.*

*Canary Evergreen Convolvulus.*] Convolvulus with twining, woody, perennial ſtalks and branches, winding about ſupport twenty feet high, garniſhed with heart-ſhaped oblong, downy, evergreen leaves, and axillary foot-ſtalks, each ſupporting ſeveral purpliſh flowers.

[5]CONVOLVULUS *Cneorum.*

*Cneorum Album, or Silvery Convolvulus.*] Convolvulus with upright, ſhrubby, perennial ſtalks, branchy, and a yard high, cloſely garniſhed on every ſide with ſpear-ſhaped, downy, ſilvery leaves; and at the ends of the branches, cluſtery heads of reddiſh flowers.

The flowers of all theſe ſpecies are monopetalous, bell-ſhaped, large, and ſpreading, appearing in June, July, Auguſt, and September, are very elegant; and although each flower is but of one day's duration, the annual ſorts exhibit a daily and plentiful ſucceſſion till killed by the froſt, and ripen abundance of ſeeds.

They are all natives of diſtant countries, but have long been inhabitants of our gardens as plants of ornament.

All the annual kinds are hardy, and are beautiful furniture for the pleaſure-ground; will proſper in any common ſoil, and are proper both for borders and the vacant ſpaces in the fronts of the moſt conſpicuous ſhrubbery-clumps; and they all riſe freely from ſeed in the full ground, which may be ſown where they are to remain to flower; obſerving, that the *Convolvulus Tricolor*, or *Minor*, may either be ſuffered to trail upon the ground, according to its natural growth, or may be tied up to ſticks: but the other two annual ſpecies, and their varieties, being of the voluble or twining running kind, muſt have tall ſticks to climb upon, on which they will naturally twine themſelves ſeveral feet high, flowering all the way, and appear very ornamental.

The propagation of all theſe annual kinds is by ſowing the ſeed in March or April, in patches, in the places where they are to flower; in each patch ſow four or five ſeeds half an inch deep, and when the plants are an inch or two high, thin them, leaving but two or three of the beſt in each patch, (ſee ANNUAL PLANTS) managing them afterwards as above directed.

The two perennial ſpecies are tender, but elegant furniture for the green-houſe collection, and well worth the attention of every one poſſeſſed of the conveniencies for preſerving them during winter.

Let them be kept in pots of rich earth, and managed as *geraniums*, and myrtles, &c. See GREEN-HOUSE PLANTS.

The propagation of theſe two ſorts here is commonly by layers in the ſpring, which take root freely in three or four months; cuttings of the young ſhoots alſo grow freely in a ſhady border in May, June, and July; ſuckers from the root alſo make good plants.

Of this genus, the two following perennials, Bindweed, and Bearbind, before hinted, are well-known troubleſome weeds; but as they produce many elegant flowers, ſome for variety preſerve here and there patches of them for flowering.

Their titles, &c. are,

[6]CONVOLVULUS *Arvenſis.*

*Field Perennial Convolvulus, or Bindweed.*] Convolvulus with creeping and deeply penetrating, ſmall, fibrey, tough roots; many weak trailing and twining ſtalks, two or three feet long, garniſhed with ſmall, triangular, arrow-pointed leaves, the baſe pointed at both ſides; and at all the joints, a ſingle flower, on each foot-ſtalk, of different colours in different varieties.

*Varieties.*] Field Perennial Convolvulus with white flowers—roſe-coloured flowers—roſe and white ſtriped flowers—white and purple flowers—white and purple ſtriped flowers—purple white-rayed flowers.

All theſe varieties grow wild in great abundance on the ſides of banks and dry gravelly ſoils, where they exhibit a profuſion of flowers; but if ſome patches are intended for the garden by way of variety, great care is requiſite to keep their roots within due compaſs, for they creep far, and their ſtalks over-run whatever they grow near, and often riſe naturally in gardens, proving moſt troubleſome weeds, difficult to eradicate, for the roots run deep, and are ſo very tough, that gardeners in wrath often call them the devil's guts.

The roots are perennial, and the ſtalks riſe in ſpring, and die to the root in autumn.

[7]CONVOLVULUS *Sepium.*

*Hedge Perennial Convolvulus, or Great White Bearbind*] Convolvulus with long, creeping, thick, fleſhy, white roots, ſending up annually many twining ſtalks, winding round ſupport ten or fifteen feet high, garniſhed with large, roundiſh and oblong, arrow-pointed leaves, divided at the baſe; and long foot-ſtalks from the joints of the branches, each ſupporting one large, bell-ſhaped, pure white flower.

*Varieties.*] Large purple flowers—large purple-ſtriped flowers.

This ſpecies grows wild in hedges and gardens, have perennial roots, and annual ſtalks, aſcending ſpirally round the neighbouring plants, buſhes, hedges, and trees, producing many fair flowers; but if ſome patches are deſigned as climbers in wilderneſs-works, or ſhrubberies, for variety, they ſhould be placed detached from all other plants and trees, and fix long ſtout ſtakes for their ſtalks to twine upon, and keep their roots within due bounds, for they often riſe naturally in gardens, and prove moſt troubleſome weeds to the gardener, having very creeping roots, that multiply greatly, run deep in the ground, and the leaſt bit will grow and ſend up ſtalks that overrun and twine round every thing in their progreſs; therefore, in digging the ground, every bit that appears ſhould be carefully picked out, and in ſummer the ſtalks ſhould be conſtantly pulled up, which will alſo contribute conſiderably to the deſtruction of the roots.

The following perennial of the ſame genus is alſo cultivated in ſome gardens for variety.

8 CONVOLVULUS *Batatas.*

*Batatas, or Spaniſh-Potatoe.*] Convolvulus with large, oblong, tuberous, white, eatable roots; trailing ſtalks three or four feet long; heart-ſhaped-angular leaves; and large, bell-ſhaped, white flowers; and the ſtalks rooting at the joints, and form large tubers.

This is a native of Spain and Portugal, where the roots grow very long and large, reſembling large white kidney-potatoes; they do not, however, acquire perfection in England, but a few of the roots are annually imported from the above countries for curioſity, and we may often ſee them lying in the great fruiterer's ſhops in London.

If intended to have a few plants for variety, plant the roots, either whole or divided, in a warm border, in March or April, where they will ſend up ſtalks, and flower in autumn; but to have them in greater perfection, plant the roots in a ſlender hot-bed, covered with a frame and glaſſes during bad weather, by which aid they flower earlier, and often form many tubers at the joints.

CONUS, a Cone; a ſpecies of fruit, or ſcaly ſeed-veſſel, of the coniferous trees, as the pine-tree, &c. formed into a conical figure, and commonly called a Cone, *Conus*; but modern botaniſts have ſubſtituted in its place *Strobilas*. See STROBILUS.

This ſpecies of ſeed-veſſel is formed of an amentum, and compoſed of many hard woody ſcales, curiouſly arranged, and fixed by their baſe to an axis, which occupies the middle of the Cone, ſo they open only at top: in many ſpecies of pine-tree, the ſcales of the Cone are of a bony nature, and almoſt united, as thoſe of the cedar of Lebanon, Scotch pine, &c in fir, larch, arbor-vitæ, and cypreſs, the ſcales are of a ſubſtance like hard leather; and in juniper, ſavin, &c. they are united, and become fleſhy and ſucculent like a berry. Theſe ſcales, which compoſe the Cones, ſerve, at firſt, each as a calix to a fructification, and being perſiſtent, they harden by degrees to a bony or very hard ſubſtance, ſerving alſo as a ſort of pericarpium to the ſeeds, which are lodged naked principally betwixt the bottom of the ſcales, and by them nouriſhed as in a proper ſeed-veſſel.

The ſcales of the Cones often ſo cloſely involve the ſeeds, that they cannot be diſlodged without violence, by ſplitting the Cones open with an inſtrument driven through them, or till they are expoſed to the midſummer ſun, or before a fire, which cauſes them to open gradually. See PINUS.

The ſeeds themſelves are moſtly oblong, hard like a nut, and crowned with a large membranaceous wing.

Theſe ſeeds or kernels, in ſome ſpecies of *pinus*, are eatable, particularly thoſe of the *pinus pinea*, or ſtone-pine, being exceeding wholeſome, and good for coughs and conſumptions; and in Italy, where the trees abound, they are ſerved up to table with other fruits in the deſert, during the winter ſeaſon.

CONYZA, Fleabane.

It conſiſts of herbaceous and ſhrubby plants, adorned with compound flowers, and of which there is one ſmall ſhrubby ſpecies, pretty common in our green-houſes.

It is titled,

CONYZA *Candida.*

*Shrubby White-leaved Conyza.*] Conyza with a ſhort ſhrubby ſtalk, branching ſix or eight inches high; cloſely garniſhed with oval, ſmall, downy, white, ſilvery leaves; and from the ſides and ends of the branches, long woolly flower-ſtalks, each ſuſtaining two or three yellow compound flowers.

It requires ſhelter in winter, and is very beautiful in its low buſhy growth and ſilvery leaves: let it be kept in pots of rich earth, to be moved to a green houſe or garden-frame, to have ſhelter from froſt; and it may be propagated by ſlips of its branches in ſpring, which, if planted in pots, and plunged in

in a hot-bed about a month, and often watered, will grow freely; but cuttings planted in ſummer, often emit roots without the aid of a hot bed.

COREOPSIS, Tick-ſeeded Sunflower.

The plants are herbaceous very flowery perennials, proper for the pleaſure-ground, obtaining from three to ſix or eight feet ſtature, terminated by cluſters of compound radiated flowers.

Claſs and order, *Syngeneſia Polygamia Fruſtanea.*

*Characters.*] CALIX, compound radiated flower, having a double general cup; the outer one is of eight ſmall leaves, and the inner one is large and coloured. COROLLA, many hermaphrodite tubular florets form the diſc, and eight large flat neutral ones the ray. STAMINA, five ſhort filaments, and cylindric antheræ. PISTILLUM, a compreſſed germen, ſlender ſtyle, and bifid ſtigma; but no ſtyle nor ſtigma in the neutrals. PERICARPIUM, none. SEMINA, each hermaphrodite floret ſucceeds to an orbicular ſeed, bordered and horned at top.

The ſpecies of moſt note are the three following perennials.

[1]COREOPSIS *Alternifolia.*

*Alternate-leafed Virginia Coreopſis.*] Coreopſis with upright ſtrong ſtems ſeven or eight feet high, garniſhed on every ſide with ſpear-ſhaped, ſawed, alternate leaves, having decurrent winged foot ſtalks or borders, running from the baſe of one to the other, and the ſtems crowned by large, radiated, yellow flowers.

[2]COREOPSIS *Tripteris.*

*Ternate-leafed American Coreopſis.*] Coreopſis with upright, round, ſmooth ſtalks, ſix or ſeven feet high, garniſhed at each joint with trifoliate oppoſite leaves, and the ſtalks terminated by bunches of large flowers, having a yellow radius and purple diſc.

[3]COREOPSIS *Verticillata.*

*Verticillate Multifid-leafed Coreopſis.*] Coreopſis with upright, angular, ſtiff ſtalks, three or four feet high, branching by pairs, adorned round the joints with compound-winged, finely divided leaves; and from the ſides of the branches, long foot-ſtalks, each ſupporting one flower, having a dark-purple middle, and bright yellow ray.

Theſe have all perennial fibrous roots, and annual ſtalks, which riſe in ſpring, flower from July till October, and decay to the root in November.

The flowers are all compound, radiated, and pretty large, ſhaped like ſunflowers, but ſmaller, and are very ornamental.

All three ſpecies are good furniture for the large compartments of the pleaſure-ground, either for ſpacious borders, or the ſhrubbery plantations, introducing them in the vacant ſpaces between the ſhrubs, on the boundaries of lawns or principal walks, for all of them will exhibit a plentiful bloom from July or Auguſt, until prevented by froſt.

Their propagation is eaſily effected by ſlipping or dividing the roots in autumn, when the ſtalks decay, planting the ſlips at once where they are to remain, and they will call for no farther trouble than keeping them clean from weeds, and to cut down the decayed ſtalks annually in autumn.

CORIANDRUM, Coriander.

It conſiſts of herbaceous annual herbs of the culinary and medical tribe, and their leaves are the uſeful parts for the kitchen, and the ſeeds for medicine.

Claſs and order, *Pentandria Digynia.*

*Characters.*] CALIX, umbellate flowers, having a general involucrum, ſcarce monophyllous, and the partial one of three leaves, and a ſmall five-parted calix to each floret. COROLLA, a difform, radiated, general umbel, and the florets compoſed of five heart-ſhaped inflexed petals. STAMINA, five filaments, and roundiſh antheræ. PISTILLUM, a germen under each floret, two ſtyles, and radiated ſtigmas. PERICARPIUM, none; a ſpherical two-parted fruit, and two hemiſpherical ſeeds.

There are but two ſpecies, both of which have divided ſmall leaves, ſomewhat reſembling parſley; but there is but one ſpecies generally cultivated.

The ſpecies are,

[1]CORIANDRUM *Sativum.*

*Cultivated Coriander.*] Coriandrum with a ſmall, fibrey, white root, crowned by many-parted leaves, having broadiſh ſegments; and in the centre an upright, round, branchy ſtalk, two feet high, having all the branches terminated by umbels of flowers, ſucceeded by globular fruit.

[2]CORIANDRUM *Teſticulatum.*

*Teſticulated Smaller Coriander.*] Coriandrum with ſmaller many-parted leaves, and upright, angular, ſlender, branchy ſtalks, terminated by umbels of flowers, ſucceeded by teſticulated or twin fruit.

The firſt ſpecies is that commonly cultivated,

vated, which, as a garden-herb, is ſometimes uſed both for culinary uſes in ſoups, &c. and as an ingredient in ſallads; but as the leaves are of a fœtid ſmell, it is in no great eſteem in England, except in ſome foreign families.

It is propagated by ſeed, which for garden uſe may be ſowed any time in ſpring or ſummer, ſowing it in ſhallow drills half an inch deep, and let the drills be ſix inches aſunder, obſerving, as the plants ſoon fly up to ſeed, a repetition of five or ſix ſowings is requiſite from March till September; and the laſt ſowing ſhould be on a warm border, to ſtand the winter.

When this plant is to be cultivated for its ſeed, it ſhould be ſowed in March, either in drills a foot aſunder, or by broad-caſt, and rake it in; and when the plants are an inch or two high, hoe them to ſix or eight inches diſtance.

CORIARIA, the Tanner's, or Myrtle-leafed Sumach.

It is a hardy deciduous, ſmall-leafed, flowering ſhrub for the ſhrubbery, adorned with ſpikes of quinquepetalous flowers.

Claſs and order, *Dioecia Decandria.*

*Characters.*] CALIX, male and female flowers on diſtinct plants, having ſmall five-leafed cups. COROLLA, five oval petals. STAMINA, ten filaments, and oblong antheræ. PISTILLUM, five germina, five ſtyles, and ſimple ſtigmas. PERICARPIUM, none; the petals become a fleſhy angular berry, incloſing five ſeeds.

The ſpecies is,

CORIARIA *Myrtifolia.*

*Myrtle-leafed Coriaria.*] Coriaria with a ſhrubby, pithy, brown ſtem, cloſely branching from the bottom, and forms a buſhy head three or four feet, thickly garniſhed with oblong, pointed, ſmalliſh, bright-green leaves, in pairs oppoſite; and at the ſides and ends of the branches, ſmall ſpikes of whitiſh flowers.

*Varieties.*] Male-flowered Coriaria—Female Coriaria.

This is a proper ſhrub for any of the common ſhrubbery compartments, to encreaſe the variety, where its roots will creep conſiderably, and ſend up ſpawn, or many ſmall ſuckers, for encreaſe.

It is eaſily propagated by ſuckers from the root, which it affords plentifully, and may be taken off with fibres every autumn or winter.

Layers in autumn will alſo be rooted in a year.

CORNUS, Cornel-tree, or Cornelian-Cherry, and Dog-wood.

This genera conſiſts principally of hardy deciduous trees and ſhrubs, proper for the ſhrubbery plantations, adorned with oblong leaves, and umbellate white flowers.

Claſs and order, *Tetrandria Monogynia.*

*Characters.*] CALIX, umbellate flowers, included in a four-leaved coloured involucrum, the florets having a very ſmall four parted cup. COROLLA, each floret compoſed of four oblong acute petals. STAMINA, four erect filaments, and roundiſh incumbent antheræ. PISTILLUM, a roundiſh germen under the receptacle, filiforme ſtyle, and blunt ſtigma. PERICARPIUM, a roundiſh berry, including a bilocular nut, having two kernels.

There are three ſpecies of the tree and ſhrub kind, furniſhing ſeveral eminent varieties, one of which ſpecies grows wild in England; the reſt are of American growth, but all hardy enough to ſucceed here in the full ground.

The ſpecies are,

[1]CORNUS *Mas.*

*Male Cornus, or Cornelian Cherry-tree.*] Cornus with an upright tree-ſtem, riſing twenty feet high, branching, and form a large head, garniſhed with oblong leaves, and ſmall umbels of yelloviſh-green flowers at the ſides and ends of the branches, appearing early in ſpring, ſucceeded by ſmall, red, cherry-like, eatable, acid fruit.

This ſpecies is eſteemed both as a flowering ſhrub, and for its fruit, to preſerve for making tarts.

The wood of this tree being extremely hard, derives the name *Cornus*, i. e. of a horn-like hardneſs and duration, and is ſaid to laſt as long as iron.

[2]CORNUS *Sanguinea.*

*Bloody-twig, or Common Dog-wood.*] Cornus with an upright tree-ſtem, branching ten or twelve feet high, having blood-red ſhoots, garniſhed with oblong, pointed, nervous leaves, two inches long; and all the branches terminated by umbellate white flowers, ſucceeded by black berries.

*Variety.*] With variegated leaves.

This ſpecies grows wild in the hedges in many parts of this kingdom, but is cultivated in the nurſeries, and may, with propriety, be introduced in large ſhrubberies, both for the variety of its foliage and flowers, as well as for the ſingular appearance of its red ſhoots in winter, when devoid of leaves.

[3]CORNUS *Florida.*

*Virginia*

*Virginia Dog-wood.*] Cornus with a tree ſtem, branching twelve or fifteen feet high, and fine red ſhoots, garniſhed with large obverſe heart-ſhaped leaves; and the branches terminated by umbellate white flowers, having a large involucrum, ſucceeded by dark red berries.

*Variety.*] Virginia Dogwood with a red involucrum.

The following are ſuppoſed to be only varieties of the above ſpecies.

*Female Narrow leaved Virginia Dog-wood.*] Cornus with an upright tree-ſtem, branching eight or ten feet high, having very red ſhoots; ſpear-ſhaped, acute, nervous leaves; and the branches terminated by umbellate white flowers, ſucceeded by red berries.

*Blue-berried American Dog-wood.*] Cornus with an upright ſtem, branching eight or nine feet high, having beautiful red ſhoots; large oval leaves, hoary and whitiſh underneath; and all the branches terminated by umbels of white flowers, ſucceeded by bunches of large, oval, blue berries.

This variety is remarkably ornamental both in its fine, large, whitiſh foliage and flowers in ſummer, and its numerous bunches of elegant blue berries in autumn.

*White-berried Penſylvanian Dog-wood.*] Cornus with an upright ſtem, branching eight or ten feet high, and very red ſhoots; oblong-oval leaves, whitiſh underneath; and large umbels of white flowers, ſucceeded by white berries.

*White-leaved American Dog-weed.*] Cornus with an upright ſtem, branching eight or nine feet high; ſpear-ſhaped, acute, ſmooth leaves; and large umbels of white flowers, and red berries.

Moſt of theſe ſpecies are ſtrong ſhooters, well clad with leaves, from two to four inches long, of a lightiſh colour.

All theſe trees are elegant furniture for large ſhrubberies, wilderneſs-works, and all other ornamental plantations, where they will effect a fine variety with their leaves and numerous flowery umbels in ſummer, their cluſters of berries in autumn, and thoſe of the Dog-wood kinds, with their beautiful red ſhoots in winter, when the leaves are fallen.

They all proſper in any common ſoil and expoſure; and as to their culture, permit them to aſſume their own natural growth, except juſt retrenching any rambling ſhoots, and clear away ſuckers from the roots, and all dead wood from the branches.

*Propagation of all the Sorts.*

Their propagation is by ſeed, layers, and cuttings, all in the full ground.

By ſeeds.—The ſeed of the American kinds generally arrive from thence in ſpring, which ſhould be ſown as ſoon as poſſible in a bed of good earth half an inch deep; but they rarely germinate till ſpring following, unleſs they are ſowed in autumn; therefore the ſeeds of the Cornelian-cherry, and Common Dog wood, as alſo thoſe of all the others that ripen here, ſhould be ſown in October, and they will, for the general part, grow the ſucceeding ſpring; and when the plants are a year old, plant them out in nurſery-rows, and when from two to four or five feet high, are of due ſize for the ſhrubbery, &c.

By layers.—Let the ſhoots of the year be layed in autumn, they will all be well rooted, and fit to tranſplant the autumn following.

By cuttings.—This may be performed in October or November, chuſing ſtrong ſhoots of the year, cut ten or twelve inches long; plant them three parts in the ground, and they will be well rooted by autumn following.

Suckers from the roots will alſo make good plants.

When theſe ſhrubs are from two to four or five feet high, they are fit for the ſhrubbery.

CORONILLA, Jointed-podded Colutea, and *Emerus*, or Scorpion-Sena.

Of this genus there are ſome ſhrubby evergreens and deciduous ſhrubs, proper for the green-houſe and ſhrubbery collections, ornamented principally with pinnated many-lobed leaves, and cluſters of papilionaceous yellow flowers, ſucceeded by long jointed ſeed-pods.

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX is monophyllous, compreſſed, erect, and bifid. COROLLA is papilionaceous; the vexillum heart-ſhaped, and the ſides reflexed; the wings oval, and join at top; and the carina ſhort, compreſſed, and pointed. STAMINA, ten filaments, nine of them united, the other ſtands ſeparate, and ſmall antheræ. PISTILLUM, an oblong taper germen, briſtly ſtyle, and obtuſe ſtigma. PERICARPIUM, a long, taper, jointed pod, having many ſeeds.

The ſpecies are as follow: the firſt four are low, rather tender ſhrubs, and are commonly retained in pots for ſhelter of a green-houſe in winter.

[1]CORONILLA *Glauca.*

*Sea green-leaved Coronilla.*] Coronilla with a ſhrubby ſtalk, branching two feet high; pinnated evergreen leaves, of about five pair of glaucous-coloured lobes, terminated by an odd one; and, from the ſides of the branches, many roundiſh bunches of bright yellow odoriferous flowers.

[2]CORONILLA *Argentea.*

*Silvery-leaved Cretan Coronilla*] Coronilla with a ſhrubby ſtalk, branching two feet high; pinnated leaves of nine or eleven ſilvery lobes; and roundiſh bunches of yellow flowers.

[3]CORONILLA *Valentina.*

*Valentian Nine-lobed Coronilla.*] Coronilla with a ſhrubby ſtalk, branching a foot or eighteen inches high; pinnated leaves of about nine pair of ſmall lobes; and the branches terminated by bunches of yellow flowers.

[4]CORONILLA *Juncea.*

*Ruſh-lobed Spaniſh Coronilla.*] Coronilla with a ſhrubby ſtalk, branching two feet high, garniſhed with leaves of five and three very narrow, ſpear-ſhaped, fleſhy lobes, and ſmall bunches of bright yellow flowers.

The following is a hardy, large, very beautiful, deciduous, flowering ſhrub, and remarkably floriferous.

[5]CORONILLA *Emerus.*

*Emerus, or Scorpion-Sena.*] Coronilla with a ſhrubby ſtem, branching numerouſly ſix or eight feet high, cloſely garniſhed with winged leaves of three pair of lobes, terminated by an odd one; and at the ſides of the branches, numerous long flower-ſtalks, each ſupporting two or three large yellow flowers, ſucceeded by longiſh pods.

*Variety.*] Dwarf Scorpion-Sena.

The flowers of all theſe ſhrubs are of the papilionaceous or butterfly kind, being compoſed of a ſtandard, two wings, and a *carina*, or keel, ſee the *Characters*, appearing commonly in May and June in great plenty; and the *Emerus*, or Scorpion-Sena, appears covered with them, continuing long in beauty; and all the ſorts are ſucceeded by jointed pods in autumn, filled with ripe ſeed.

The firſt four ſpecies are rather tender, and, although they will live in open air in mild winters, they are impatient of ſevere weather; they ſhould therefore, for the general part, be potted, to be moved to ſhelter of a green-houſe or glaſs-frame in winter; and others may be placed in a ſheltered ſituation in the full ground, to take their chance.

The fifth ſort, *Scorpion-Sena*, and variety, are hardy and elegant flowering ſhrubs for the principal ſhrubbery compartments in gardens of any extent, and there are but few hardy ſhrubs that make a finer appearance.

*Propagation of all the Sorts.*

The firſt four ſpecies are propagated by ſeeds in ſpring, either on a warm border, or in a ſlender hot bed; but the latter will forward them greatly, ſowing the ſeeds in pots of rich earth half an inch deep, and plunge them in the hot-bed; and when the plants are two or three inches high, prick them in ſeparate ſmall pots, allowing ſhade, water, and air, and harden them gradually to the full air in June, in which let them remain till October, then moved to ſhelter of a frame during winter, but cover them only in time of froſt.

The *Scorpion-Sena* may be encreaſed plentifully both by ſeeds, and by layers and cutings.

Sow the ſeeds in March, in a bed of light earth, and cover them half an inch deep, giving occaſional waterings in dry weather, and the plants will riſe in a month or ſix weeks; and when they have had a year or two's growth, tranſplant them from the ſeed-bed in nurſery rows, and in two or three years after they will be large enough for the ſhrubbery.

By layers. It may be done in autumn or winter, chuſing the one-year's ſhoots, giving them a gentle twiſt, and they will be rooted by the winter following.

By cuttings. Plant ſome of the young ſhoots in October or November in a ſhady border, giving water the following ſpring and ſummer, and many of them will be rooted by autumn.

COROLLA, Corolla, or Little Crown, the botanic name for the flower-leaves, i. e. the beautiful coloured leaves of the flower, which immediately ſurround and defend the organs of generation, and ſtand within the calix, where there is any.

This conſpicuous and beautiful part of plants, the Corolla, is deſigned not only as an ornament to the reſpective plants, but alſo to defend and nouriſh the tender generative organs, till they have performed their fecundating function, &c. and is therefore by Linnæus, in aſſimilating the animal and vegetable kingdoms, diſtinguiſhed by the name of *auleum floris*, or the palace in which the nuptials of the plant is celebrated.

The

The Corolla may be ſaid to conſiſt of two parts, the petals, and the nectarium; the laſt of which, however, is rather a ſtriking ſuperfluity, or occaſional appendage in ſome, than a neceſſary part of every flower, ſee NECTARIUM; ſo that the petals are always to be conſidered as the principal part of the Corolla.

A Corolla of one petal is termed *monopetalous*; of two, *dipetalous*; of three, *tripetalous*; of four, *tetrapetalous*; of five, *pentapetalous*, or *quinquepetalous*; of ſix, *hexapetalous*, or *ſexpetalous*; of eight, *octapetalous*; or of many *polypetalous*; though all flowers, having more than one petal, are ſpecies of *polypetalous*.

Obſerve, in reſpect to number, that, in the characteriſtic deſcription of the Corolla, the number of petals are always to be determined from their ſingle or common ſtate, never from the doubles, which are only accidental varieties; as, for example, the *cheiranthus*, or wallflower and ſtock-gilliflowers, in their common ſtate, the Corolla conſiſts only of four petals, but in the doubles they are innumerable; and ſo of all other flowers that are apt to run into doubles, which are properly enough ſtyled luxuriant flowers. See LUXURIANS *Flos*, and PLENUS *Flos*.

The real numbers of petals in the Corolla is determined from the baſe; that is, when the Corolla appears of two, three, or many parts or diviſions, continued to, or very near the bottom, it is conſidered as ſo many diſtinct petals, notwithſtanding the baſe of the ſeveral petals may connect, as is the caſe of the mallow tribe, the genus *Narciſſus*, and many others; but when the limb, or upper ſpreading part of the Corolla, is divided only about half way, or a little more or leſs, into ſeveral parts, it is conſidered only as one petal, *monopetalous*, divided into ſo many ſegments or parts.

Segments or diviſions are very frequent in monopetalous flowers, which very commonly have their limb divided into five parts; in polypetalous flowers theſe diviſions of the real petals ſeldom prevail.

In reſpect to the figure of the Corolla and petals, that, in monopetalous flowers, there being but one petal, it is either bell-ſhaped, funnel-ſhaped, ſalver-ſhaped, wheel-ſhaped, ringent or maſque-ſhaped, as explained below; and in a polypetalous flower, the Corolla is either regular, by having all its petals of equal figure, magnitude, proportion, and poſition, as in tulip, Narciſſus, lily, &c. or irregular, by the petals aſſuming different figures, ſizes, and poſition, in the ſame Corolla, as in *aconitum*, or monk's hood, balſamine, columbine, and lark-ſpur, &c.

In a monopetalous Corolla, the lower hollow part is called the tube, the upper ſpreading part the limb, the opening of the tube the chaps or jaws, *faux*. See TUBUS, LIMBUS, and FAUX.

In a polypetalous Corolla, the lower part is termed the claw, *unguis*; the upper ſpreading part *lamina*. See UNGUIS and LAMINA.

The Corolla has different terms, according to the figure it aſſumes, as follow.

*Corolla Companulata*, a bell-ſhaped Corolla, conſiſts of one petal, regular and hollow like a bell, as in the genus campanula, convolvulus, and deadly night-ſhade.

*Corolla Infundibuliformis*, a funnel-ſhaped Corolla, conſiſts of one regular petal, with a conic ſhaped limb, ſtanding upon a long tube, as in *datura*, or thorn-apple, oleander, tobacco, and marvel of Peru.

*Corolla Hypocrateriformis*, a ſalver-ſhaped Corolla, has one regular petal, having a plane or flat-ſpreading limb ſtanding on a very ſhort tube, as in periwinkle, &c.

*Corolla Rotata*, a wheel-ſhaped Corolla, has one regular petal, having a plane or flat limb without any tube, ſometimes entire, and ſometimes divided, as in *borago*.

*Corolla Ringens*, a gaping or grinning Corolla, has one irregular petal, ſhaped ſometimes like a maſque or ſnout of an animal with two lips, as in ſnap-dragon, or calve's-ſnout; ſometimes is terminated behind by a nectarium, in form of a tube, or ſpur of a fowl, as obtains in *antirrhinum linaria*, or toad-flax. See RINGENTUS and PERSONATUS.

*Corolla Labiatus*, a labiated or lip Corolla, having two lips, and is a ſpecies of *Corolla Ringens*. See LABIATUS and VERTICILLATA.

*Corolla Cruciformis*, a cruciforme, or croſs-ſhaped Corolla, compoſed of four equal petals, that ſpread at top on their claws in form of a croſs, exemplified in ſtock-gilliflower, ladies-ſmock, and the other numerous flowers of the claſs *tetradynamia*.

*Corolla Papilionacea*, a papilionaceous or butterfly ſhaped Corolla, compoſed of four or five irregular petals, which, from their figure and poſition, bear an obvious reſemblance to a butterfly with its wings expanded, exemplified in the pea, bean, kidney-bean, and

and laburnum, &c. the petals are characterized by diſtinct names; the upper one is called the ſtandard, *vexillum*; the two ſide ones the wings, *alæ*; and the lowermoſt one, ſometimes concave and divided, is called the keel, *carina*, from its reſemblance to the bottom or keel of a boat; is ſometimes of one petal, and ſometimes two united. See PAPILIONACEA.

Moſt of the plants in the claſs *diadelphia* have papilionaceous flowers.

*Corolla Regularis Polypetala*, a regular polypetalous Corolla, having two, three, or many regular petals, of equal ſhape, magnitude, and poſition, as in roſe-campion, holly-hock, tulip, lily, &c.

*Corolla Irregularis Polypetala*, an irregular polypetalous Corolla, conſiſts of ſeveral irregular diſſimilar petals, generally accompanied with a nectarium, as in *aconitum*, balſamine, lark-ſpur, *orchis*, or bee-flower, *cypripedium*, or lady's-ſlipper; and moſt of the papilionaceous flowers come alſo under this denomination. See IRREGULARIS *Flos*.

With reſpect to duration of the Corolla, the petals ſometimes fall off immediately after their expanſion, or endure but a few hours, or ſometimes but one day; ſometimes they are of ſeveral days, or even weeks, duration, and ſometimes the Corolla withers on the plant without dropping at all, as often obtains in the cucumber, in which the flower ſometimes remains, on the end of the fruit, till fit to gather; but in moſt plants the Corolla falls off with the ſtamina and other parts ſoon after the fecundating function is effected; to aſſiſt which, by defending the generative organs, is apparently the main deſign of the Corolla.

CORTUSA, Bear's-ear Sanicle.

It furniſhes two very low, herbaceous, flowery perennials, crowned by umbels of monopetalous, wheel-ſhaped, auricula-like flowers, having five ſtamina and one ſtyle.

The ſpecies are,

[1]CORTUSA *Matthiolus*.

*Bear's-ear Sanicle of Matthiolus*.] Cortuſa with a fibrey root, crowned by many oblong, heart-ſhaped, indented leaves, in a cluſter, and among them round flower-ſtalks ſix inches high, terminated by umbels of fine red flowers longer than the calix.

[2]CORTUSA *Gmelini*.

*Bear's-ear Sanicle of Gmelin*.] Cortuſa with a fibrey root, crowned by a tuft of heart-ſhaped leaves, and flower-ſtalks four inches high, terminated by umbels of pale red flowers ſhorter than the calix.

They are natives of mountainous rocky parts abroad, ſo muſt have a dry lean ſoil; or may be kept in pots of dry ſandy earth, placed in the ſhade, and in ſummer muſt be duly watered; and their propagation here is by ſlipping the roots in October.

CORYLUS, the Hazel or Nut-tree, Filbert, &c.

This genus furniſhes two ſpecies only, both of them of the large ſhrub kind, hardy and deciduous, and of which there are ſeveral varieties, valuable in gardens for their fruit, as alſo by way of variety in large ſhrubbery and wilderneſs works.

Claſs and order, *Monoecia Polyandria*.

*Characters*.] CALIX, male and female flowers, remote on the ſame plant; MALES are collected in a long katkin, or ſcaly amentum, each ſcale forming a calix. COROLLA none. STAMINA, many very ſhort filaments in each ſcale, and oblong erect antheræ; FEMALE FLOWERS are included in the future bud ſitting cloſe to the branches, having a thick two-leaved leathery calix, enlarging to the length of the fruit, and lacerated at the margin. PISTILLUM, a roundiſh germen, two ſtyles, and ſimple ſtigma. PERICARPIUM, none; the germen becomes an oval nut, pointed at the top.

Botaniſts admit of but two real ſpecies of *Corylus*, and that the Hazel, Filbert, Cob-nut, &c. are all varieties of the ſame ſpecies, and that the common Hazel or Nut-tree of the woods is the original ſpecies.

The ſpecies are,

[1]CORYLUS *Avellana*.

*Avellana, or Common Hazel or Nut-tree*.] Corylus with an upright tree-ſtem, very branchy, and forms a full head from ten to twenty feet high, garniſhed with large roundiſh, pointed leaves, having oval ſtipulæ, and male flowers, growing in long yellowiſh katkins, and female flowers cloſe to the branches, appearing in ſpring, of a red colour, ſucceeded by the fruit in large cups, ripening in autumn.

*Varieties*.] Common Wood-nut with a white-ſkinned kernel—Red Wood nut, having a red-ſkinned kernel.

*Large Cluſter Wood-nut*—The Nuts grow in large cluſters, and the Nuts are alſo large and fine, and very proper for garden culture.

*Great Cob-nut*—A remarkably large round Nut with a thick and very hard ſhell, more valuable

valuable for its ſize for variety, than any particular excellency in its kernel.

*Long-nut*—is an inch and half, or two inches long, broadiſh and rounded at the top, but does not kernel well.

*Barcelona, or Spaniſh-nut*—A large, roundiſh, thin-ſhelled Nut, always remarkably well-kernelled, which is exceeding ſweet and good, and will ripen in England, ſo is a very proper ſort for culture, and the tree is a ſtrong ſhooter.

*Filbert-Nut-tree*—The branches grow more erect, and the *ſtipulæ* more oblong than the other kinds. and the fruit is oblong, large, thin-ſhelled, and well filled with exceeding ſweet kernels, and the Nuts frequently grow in cluſters; of this there are two notable varieties—White-ſkinned Filbert—Red-ſkinned Filbert—The Red ſort is in moſt eſteem, being coveted for the beauty of its red kernel. The trees of theſe two varieties are very diſtinguiſhable; thoſe of the White ſort have the ſhoots and leaves of a light green colour, which of the Red kind are of a dark or reddiſh-green. Both the varieties are good bearers, and will ſucceed almoſt any where; they are therefore well worth culture in every garden or orchard.

[2]CORYLUS *Colurna.*

*Colurna, or Dwarf Byzantine Nut-tree.*] Corylus with an upright ſhrubby ſtem, branching four or five feet high; roundiſh, pointed leaves, and narrow acute ſtipulæ; and large round Nuts growing in cluſters.

The flowers of all theſe trees are male and female, at a diſtance on the ſame tree; the males appear in long ſcaly amentums, formed in autumn and winter, and the females, or fruitful flowers, come out in ſpring, in cluſters cloſe to the branches, having thick, two-leaved, torn cups, appearing of a reddiſh colour, and the calix incloſes the fruit, and accompanies it to maturity, generally one Nut in each cup.

All the ſorts of *Corylus* are very hardy, and will proſper in almoſt any ſituation and ſoil, high or low, or on the ſides of hills, as is evident from the common Hazel growing wild in ſuch abundance in woods, wilds, foreſts, and field hedges, in every county of the kingdom, and from which the Nuts are collected that ſupply the different markets; the trees alſo turn out to good account when growing in coppices, to cut as underwood, and for poles for various uſes, as hoops, ſpars, hurdles, handles to huſbandry implements, walking-ſticks, fiſhing-rods, and many other uſes, and for which purpoſes they will afford a falling every fifth, ſeventh, or eighth year, according to the uſes for which they are deſigned.

For purpoſes in gardening, ſeveral of the varieties are worthy of culture, for the ſake their fruit; particularly the Cluſter-nut, Large Cob-nut, Barcelona-nut, and the two varieties of Filberts; all of which may either be trained as high ſtandards, half ſtandards, or dwarfs. When required for ſtandards, they ſhould be planted at fifteen feet diſtance, either in the garden, or on the edge of orchards, &c. or they may be dropped ſingly in different parts, to form the greater variety; and in pleaſure-grounds, ſome may be diſpoſed by the ſides of ſhady walks, or other parts of the wilderneſs or ſhrubbery works contiguous to the walks, ſome as dwarfs, others as half and full-ſtandards, where they will exhibit variety as common ſhrubs, and the progreſs of the fruit will afford entertainment in excurſions through the plantation, as well as furniſh a ſupply for the deſert.

Obſerve, when you deſign them to form full ſtandards, you ſhould train them with a ſingle ſtem five or ſix feet high, at which height ſuffer them to branch out and form a head, according to their natural growth; but for half ſtandards, a three or four feet ſtem is ſufficient; and for dwarfs, train them with a ſingle ſtem to a foot and half in height, then top them, and they will branch out, and form a low ſpreading head.

All the culture theſe trees require, after being planted out where they are to remain, is to clear the bottom annually from ſuckers ariſing from the root, and the ſtem from all ſide-ſhoots; and as to their heads, let them, for the general part, take their natural growth, except juſt retrenching any very rambling ſhoot or branch.

But ſometimes theſe trees are planted to form a kind of hedge, ſetting them five feet diſtance; ſo leave them entirely to nature to ſhoot from the bottom, ſides, and top, in their own way; but theſe never produce ſo large, nor fine-flavoured fruit, as trees with one ſtem, and ſtand at ſuch diſtances, that their heads have full ſcope to ſpread regularly every way.

When a full plantation of theſe trees are deſigned for their fruit, I ſhould adviſe planting them in rows not leſs than fifteen or twenty feet diſtance, nor leſs than ten or fifteen feet aſunder in the lines.

When deſigned to plant a coppice of common Nut-trees, for poles, &c. they ſhould be previouſly raiſed from the Nut in the nurſery way; and, when two or three feet high, plant them out where they are to remain, in rows five feet diſtance, and a yard in the rows, and they will be fit for the firſt fall in eight, ten, or twelve years, according to the uſes they are deſigned for, and every fifth, ſixth, or ſeventh year afterwards.

*Propagation of all the Varieties.*

All the ſorts of *Corylus* may be propagated with facility by planting the Nuts, by layers, ſuckers from the root, and by grafting and budding.

By planting the Nuts: this ſhould be done in ſpring, but until the arrival of that ſeaſon it is proper to preſerve the Nuts in ſand, in an airy room or ſhed, and in February plant them in drills near two inches deep, and the plants will appear in ſix or eight weeks, which, when a year old, plant out in nurſery-rows, and there train them two or three years, for the purpoſes wanted, i. e. either as ſtandards, half ſtandards, or dwarfs; then tranſplant them into the garden. It is to be obſerved, that in raiſing theſe trees from the Nut, the ſorts are not to be always depended on; for, like other ſeedling trees, they often vary, ſo that the moſt certain method to continue the reſpective ſorts is by layers, &c. obſerving, however, that in raiſing from Nuts, ſometimes trees are obtained, which produce Nuts as good, and ſometimes better than thoſe from which they were raiſed.

By layers: this is one of the moſt certain methods of continuing the reſpective varieties diſtinct, for layers of the Cluſter-nut never fail to produce fruit exactly of the ſame kind and manner; the ſame of the Cobs, Barcelona, and Filberts; and this is a very eaſy and expeditious method of propagation, for every twig layed will readily grow; therefore, in autumn or winter, having recourſe to ſome low-growing trees, let ſome of the lower branches, that are well furniſhed with young ſhoots, be pegged down in the ground, then lay all the young ſhoots thereof in the earth with their tops out, every one of which will root and advance in length, and be fit to tranſplant by autumn following, when they ſhould be ſeparated and planted in nurſery-rows two feet aſunder, and trained as obſerved of the ſeedlings: but when any conſiderable quantity are to be raiſed this way, it is eligible to form ſtools for that purpoſe, by previouſly a year before heading down ſome trees near the ground, to throw out a quantity of ſhoots near the earth convenient for laying, and they will furniſh a ſupply for that uſe annually.

Suckers, ariſing from the roots of trees raiſed by either of the above methods, if taken up in autumn, winter, or ſpring, with good fibres, will alſo grow, form proper plants, and produce the ſame ſort of fruit as their parent plant; and ſuckers of theſe may alſo be uſed for the ſame purpoſe.

By grafting and budding: theſe methods have alſo the ſame effect as layers, of continuing any particular variety with certainty, and the operation is to be performed in the uſual way on ſtocks of any of the varieties of this genus. See GRAFTING, &c.

CORYMBUS, a mode of cluſter-flowering, reſembling the form of a cluſter of ivy-berries, and differs from the umbel and racemus, and other modes of cluſter-flowering. See UMBELLA and RACEMUS.

A Corymbus-cluſter is diſtinguiſhable, in that many partial flower-ſtalks ariſe from different parts of the common ſtalk; and although of unequal lengths, by coming out higher or lower on the main ſtalk, yet they all riſe to the ſame height, ſo as that the flowers they ſupport forms a flat and even ſurface at top, exemplified in *ſpiræa opulifolia*, *tanacetum*, &c. and differs from an umbel, in which all the partial flower-ſtalks proceed from one point or common centre, and riſe alſo to an equal height. See UMBELLA.

A Corymbus is either ſimple or compound; ſimple, when the partial flower-ſtalks have no branches; compound, when they branch out into ſeveral ramifications, yet ſo as to form an even ſurface at top.

COTYLEDON, Navel-wort, *Cotyledon*.

The plants are ſucculent perennials, both of hardy nature, and for the green-houſe and ſtove, from half a foot to a yard and half high, adorned with roundiſh and oblong, thick, fleſhy leaves, and monopetalous, bell-ſhaped, yelloviſh flowers, in ſpikes and umbels.

Claſs and order, *Decandria Pentagynia*.

*Characters.*] CALIX monophyllous and five-parted at top. COROLLA is monopetalous, bell-ſhaped, and five parted, at the brim. STAMINA, ten erect filaments, and four-furrowed antheræ. PISTILLUM, five germina, and ſtyles, and ſimple ſtigmas. PE-

RICARPIUM, five oblong, ventricoſe, univalvular capſules, having many ſmall ſeeds.

The ſpecies are,

[1]COTYLEDON *Umbilicus.*

*Umbilicated Cotyledon, or Common Navel-wort.*] Cotyledon with round, target ſhaped, hooded, ſerrata-indented, fleſhy leaves, directly from the root, on foot-ſtalks joined to the middle, and the upper ſurface umbilicated like a navel; and amidſt them branching leafy flower-ſtalks, from half a foot to a yard high, terminated by long ſpikes of erect cloſe-ſitting flowers, of different colours in the varieties.

*Varieties are*] Umbilicated Cotyledon with yellow flowers—with reddiſh flowers—with whitiſh flowers—with ſtreaked flowers—with creeping roots—with tuberous roots.

This ſpecies and varieties grows wild in England upon old walls, buildings, and rocky places; and in gardens may ornament artificial ruins, rock-work, and grottos.

They derive the name Navel-wort from the form of its umbilicated leaves.

The three following are ſhrubby green-houſe exotics from Africa.

[2]COTYLEDON *Orbiculata.*

*Orbiculate-leaved Cotyledon.*] Cotyledon with thick, ſucculent, ligneous, perennial ſtalks, emitting crooked irregular branches, and grows from one foot to a yard or more high, ornamented with roundiſh, plane, fleſhy, entire leaves, having purpliſh edges; and at the ends of the branches, umbellate cluſters of pale yellow flowers.

[3]COTYLEDON *Hemiſpherica.*

*Hemiſpherical-leaved Cotyledon.*] Cotyledon with a thick, ſucculent, perennial ſtalk, very branchy, and but ſix or eight inches high, garniſhed with ſemi-globular thick leaves, one ſide being convex, the other plane, having purpliſh edges; and at the top of the branches, ſeveral greeniſh-purple-tipped flowers.

*Variety.*] With ſpotted leaves.

[4]COTYLEDON *Spuria.*

*Long Spatulate-leafed Cotyledon.*] Cotyledon with thick, ſucculent, ligneous, perennial ſtalks, branchy, and from one to two or three feet high; long, narrow, ſpatulate-ſhaped, fleſhy, alternate leaves; and yellow flowers, on long fleſhy foot-ſtalks at the ends of the branches.

The following is a ſtove plant from India and Ægypt.

[5]COTYLEDON *Lacinata.*

*Cut-leaved Cotyledon.*] Cotyledon with an upright, jointed, ſucculent, perennial ſtalk, a foot high; broad, trifid, thick, ſucculent, greyiſh, oppoſite leaves; and from the ends of the branches, golden-yellow quadrifid flowers.

The laſt four ſpecies are perennial in ſtalk and branches, are very ſucculent, and become ligneous or ſhrubby; the leaves are alſo ſucculent, commonly of a greyiſh colour, and remain the year round. The flowers are univerſally monopetalous, bell, or funnel-ſhaped, which in the laſt four ſorts are produced on long, thick, fleſhy foot ſtalks, appearing at different times of the year; and only the firſt ſort produce ſeeds in England.

For purpoſes in gardening, the *Cotyledon Umbilicus* may be introduced to adorn rock-work, ruins, &c. or will ſucceed in any dry gravelly ſoil; and the ſecond, third, and fourth ſorts, exhibiting a curious ſingularity in their general habit, merit a place in the green-houſe collection; as likewiſe the fifth ſort for the ſtove; obſerving, that theſe laſt four ſorts, being very ſucculent, muſt always be retained in pots of dry ſandy or rubbiſhy compoſt, and managed as other ſucculents of the green-houſe and ſtove departments. See SUCCULENT PLANTS, &c.

*Propagation.*

The firſt ſort may be raiſed from ſeed in any dry gravelly ſoil, or ſcattered in the crevices of rock-work, grottos, or old buildings, and covered with earth; the plants will come up, and afterwards propagate themſelves.

All the other ſorts are eaſily propagated by cuttings of their ſucculent branches any time from May till Auguſt; the cuttings may be from three to five or ſix inches long, which, previous to their planting, ought to lie a week or ten days, to dry over the cut part; then plant them in pots of dry compoſt, as prepared for other ſucculents, ſee COMPOST; and then, as to the green-houſe ſorts, place them either in the green-houſe, or a frame, to have ſhelter from wet, and occaſional ſhade, though it would be of particular advantage to plunge all the ſorts in a bark bed, giving occaſional ſhade, and water once a week, and they will be rooted in a month or ſix weeks, when thoſe of the green-houſe ſhould be hardened to the full air for the remainder of the ſummer.

COTYLEDONES, Cotyledons, the ſide-lobes or covers of the ſeed, which be-

comes alſo the two firſt leaves of the plant; called alſo Cotyledons, or the ſeminal or ſeed-leaves; are generally ſmooth and fleſhy, and moſt commonly two in number, as in cucumber, and moſt other plants, and are very different from the proper leaves that are afterwards produced.

The lobes accompany the plant for ſome time after its eruption from the earth, till having acquired ſufficient ſtrength and growth, the ſeminal leaves become uſeleſs, wrinkle, wither, and die away.

CRAMBE, Sea Cabbage, or Sea-beach Kale, or Sea Colewort.

The plants are herbaceous eſculents, conſiſting of perennial roots, producing annually large cabbage-like leaves, ſpreading on the ground, and robuſt flower-ſtalks; and the young ſhoots of the plant, juſt iſſuing from the earth, are excellent eating.

Claſs and order, *Tetradynamia Siliquoſa.*

*Characters.*] CALIX, four oval, patent, deciduous leaves. COROLLA, four large, broad, ſpreading, cruciforme petals. STAMINA, four long and two ſhort filaments, two-parted at top, and ſingle antheræ. PISTILLUM, an oblong germen, no ſtyle, but a thick ſtigma. PERICARPIUM, a roundiſh berry, containing one ſeed.

The ſpecies is,

CRAMBE *Maritima.*

*Maritime, or Sea-Cabbage.*] Crambe with creeping, perennial, white roots, crowned by very broad, thick, ſmooth, grey-coloured, annual leaves, divided at the edges, and ſpreading near the ground; and between them a robuſt very-branchy flower-ſtalk a foot and half high, having all the branches terminated by looſe ſpikes of white flowers in June, ſucceeded by berry-like pods the ſize of large peas.

*Varieties.*] With deeply cut leaves—with yelloviſh flowers.

This plant and varieties grows wild on the ſea ſhores in many of the maritime counties of England, but is now cultivated in many gardens, as a choice eſculent; and the young robuſt ſhoots of its leaves and flower-ſtalks, juſt as they iſſue forth from the earth, in the manner of aſparagus ſhoots, are then in the greateſt perfection for uſe; at which period they appear white, as if blanched, which, when boiled, eat exceeding ſweet and tender; and its principal ſeaſon for uſe is April and May.

This plant may alſo be employed in the pleaſure-ground as a flowering perennial, for the ſtalks divide into fine branchy heads of flowers.

*Propagation and Culture.*

It is propagated by ſeeds ſown in any common light earth in autumn or ſpring, in the place where the plants are to remain, which, when two years old, will produce ſhoots fit for uſe, and will multiply exceedingly by the roots, and continue many years.

To cultivate this plant as an eſculent in the kitchen-garden, it is proper to have them in beds four feet and half wide, with two foot wide alleys between bed and bed, for the convenience of landing them up annually in autumn, that the ſhoots may be blanched a good length; and the lighter and more ſandy or gravelly the ſoil the better, though the plants will ſucceed tolerably in any common light ſoil of a garden. Having dug and prepared the beds the width as above, draw three ſhallow drills lengthways of each bed, and ſcatter the ſeeds therein thinly, covering them half an inch deep; when the plants come up thin the rows, leaving the ſtrongeſt plants a foot aſunder; keep them clean from weeds all ſummer; and in autumn, when the leaves decay, ſpread an inch depth of light earth from the alleys over the beds; after this, nothing more is required till the following ſpring and ſummer, when the care of weeding is to be repeated; and in autumn earth the beds from the alleys as before, but muſt now be three or four inches deep; the ſpring following, in March, April, and May, the plants will produce ſhoots fit to cut for uſe; obſerving, as the heads make their appearance through the earth, to open the ſoil a little, and cut the ſhoots four or five inches within the ground.

The ſame plantation continues many years, and the roots produce a freſh crop annually.

Their general culture is keeping them clean from weeds, and every autumn clear away all the large leaves, and land up the beds from the alleys three inches deep, to maintain a due depth of ſoil over the roots for the heads to ſhoot through, that they may be blanched at leaſt four or five inches in length; and early in ſpring looſen the top of the beds with a fork, and rake them ſmooth.

To cultivate this plant for ornament, ſow the ſeed either where you deſign they ſhall remain, or in a bed, and tranſplant them in autumn.

CRASSULA,

CRASSULA, *Craſſula*, Leſſer-Orpine, or Live-ever.

This genus furniſhes ſucculent plants for the green-houſe and ſtove, from one foot to ſix or eight in height, ornamented with oblong, thick, ſucculent leaves, and funnel-ſhaped pentapetalous flowers at the ends of the ſtalks and branches.

Claſs and order, *Pentandria Pentagynia.*

*Characters.*] CALIX is pentaphyllous and permanent. COROLLA five long narrow petals, connivent at the baſe, ſpreading and reflexed at the brim, and five ſcale-like nectariums at the bottom. STAMINA, five filaments, and ſimple antheræ. PISTILLUM, five oblong acuminated germina, five ſtyles, and obtuſe ſtigmas. PERICARPIUM, five oblong, pointed capſules, and many ſmall ſeeds.

The principal ſpecies of the Engliſh gardens are,

[1]CRASSULA *Coccinea.*

*Shrubby Scarlet Craſſula.*] Craſſula with a round, jointed, reddiſh, ſucculent, perennial ſtalk, dividing into a branchy head two or three feet high, ornamented with oblong, plane, cartilaginous-ciliated, oppoſite leaves, their baſe ſurrounding the ſtalks like a ſheath; and at the ends of the branches, cloſe umbels of beautiful ſcarlet flowers.

[2]CRASSULA *Portulacaria.*

*Shrubby Purſlane leaved Craſſula.*] Craſſula with a ſtrong, tree-like, ſucculent, perennial ſtalk, branching pyramidaly three or four feet high, having reddiſh branches, garniſhed with oboval-wedge-ſhaped, ſucculent, oppoſite leaves; and flowers growing in ſpikes, but rarely appear in England.

[3]CRASSULA *Perfoliata.*

*Shrubby Perfoliate Craſſula.*] Craſſula with an upright, ſlender, ſucculent, perennial ſtalk, branching from three to ſix feet high; lanceolate-awl-faſhioned, thick, fleſhy, cloſe-ſitting leaves, plane and canaliculated above, convex below, grow oppoſite, their baſes connated, and perforated by the ſtalk; and large cluſters of white flowers at the top of the branches.

[4]CRASSULA *Punctata.*

*Punctated-leafed Craſſula.*] Craſſula with feeble, very jointy, divided, ſucculent ſtalks, eight or ten inches long; oval-oblong, punctated-ciliated, ſucculent, oppoſite leaves; and cluſters of white flowers at the ends of the ſtalks.

[5]CRASSULA *Orbiculata.*

*Orbicular-headed Craſſula.*] Craſſula with a low, feeble, perennial ſtalk, crowned by thick ſucculent leaves, collected into a round, imbricated, ſpreading head, proliferous in many ſhort trailing ſtalks every way, terminated alſo by heads of leaves; and from the centre of all the heads, cluſters of greeniſh flowers.

[6]CRASSULA *Nudicaulis.*

*Naked-ſtalked Craſſula.*] Craſſula with long, awl-ſhaped, ſuccu ent, perennial leaves, collected into a head at the crown of the root; and amidſt them a naked annual flower-ſtalk, divided into branches half a foot high, ſurmounted by cluſters of white flowers.

All theſe plants are very ſucculent both in ſtalk, branches, and leaves; both ſtalk and branches are perennial, frequently of a reddiſh colour, and the leaves are perſiſtent; and the flowers appear principally in June, July, Auguſt, and ſometimes in winter and ſpring.

The flowers conſiſt univerſally of five long narrow petals. See the *Characters.*

The plants are all exotics, principally of Æthiopia, ſo require ſhelter of a green houſe here in winter, and muſt therefore always be kept in pots.

They claim a place in our collections of ſucculent plants for variety, though, as to their flower, thoſe of the *Craſſula Coccinea*, are conſiderably the moſt beautiful, and appear annually; but as all the ſorts having a ſingularity in their external habit, renders them worthy of attention for the ſucculent collection; they muſt be potted in light ſandy compoſt, common for other ſucculents, and retained in a ſunny part of the green houſe all winter, and very ſparingly watered; but in ſummer may place them in the full air in a ſheltered place, and in dry weather watered twice a week.

Their propagation is: the firſt four ſorts are with facility encreaſed by cuttings of their ſtalks and branches, cut off from three to five or ſix inches long, in May, June, or July, and after lying in a dry place ſome days, to ſkin over the wounded part, plant them in pots of ſandy earth, placing them in a frame, to be occaſionally ſhaded from the ſun, and ſheltered from wet; they will be rooted in ſix weeks, though, where there is the convenience of a bark-bed to plunge them in, they will root ſooner.

The other two ſorts may be propagated by off-ſets of their heads, and plant them as above.

CRA-

CRATÆGUS, Wild Service-tree, Hawthorn, &c.

The plants are of the tree and ſhrub kind, hardy, and of the deciduous tribe, valuable for œconomical and ornamental purpoſes in gardening, and of ſtature from five to fifty feet, adorned with ſimple leaves, in ſome divided, others entire, and cluſters of pentapetalous white flowers in May and June, ſucceeded by bunches of red berries in autumn.

Claſs and order, *Icoſandria Digynia.*

*Characters.*] CALIX is monophyllous, five-parted, patent, and permanent COROLLA, five roundiſh concave petals inſerted into the calix. STAMINA, twenty filaments inſerted into the calix, and roundiſh antheræ. PISTILLUM, a germen under the corolla, two filiforme erect ſtyles, and capitated ſtigmas. PERICARPIUM, a roundiſh, fleſhy, umbilicated berry, containing two longiſh hard ſeeds.

There are about ſix or eight ſpecies retained in the Engliſh gardens, ſome of which admit of ſeveral curious varieties.

The ſpecies are,

[1]CRATÆGUS *Oxyacantha.*

*Oxyacantha, or Common Hawthorn, or Whitethorn.*] Cratægus with a robuſt trunk, branching from the bottom upward to ten or fifteen feet high, the branches armed with thorns; obtuſe, nearly trifid, ſawed leaves; and numerous cluſters of white flowers from the ſides and ends of the branches, ſucceeded by bunches of dark red berries called Haws.

This is a moſt uſeful tree in forming our hedges, and it grows wild all over Europe.

Other varieties of this are,

*Double-bloſſom Hawthorn*—grows like the Common Hawthorn, only the flowers double, large, and grow in large cluſters all over the branches, of great fragrance and beauty.

*Scarlet-berried Hawthorn*—grows twelve or fifteen feet high; large leaves and flowers, and exceeding large bright ſcarlet fruit.

*Yellow-berried Virginia Hawthorn*—grows ten or fifteen feet high, having its buds in ſpring yellow, and fruit of a golden yellow colour.

*White-berried Hawthorn*—A low growing tree, producing ſmall whitiſh fruit.

*Maple-leafed Hawthorn*—grows fifteen or twenty feet high; large whitiſh leaves, large bunches of flowers, and ſhining red fruit.

*Glaſtonbury-Thorn*—grows twelve or fifteen feet high, and is like the common Hawthorn in growth, leaves, flowers, &c. only with this difference, that it generally flowers in winter, which is commonly ſaid to happen on Chriſtmas-day; it, however, has no exact time of flowering, although it ſometimes happens to be in bloom about that ſeaſon, even on the very day, yet it frequently flowers in the end of January, and in February. The ſtory of this tree blowing on Chriſtmas-day, proceeds from the tradition of the original tree near Glaſtonbury, which is ſaid to have been the ſtaff of Joſeph of Arimathea, when he came over to Britain and founded the firſt Chriſtian church; that having on that day ſtuck his ſtaff into the ground, it immediately ſhot forth and bloomed, and is ſaid to have continued to blow on Chriſtmas-day ever ſince; ſo is univerſally diſtinguiſhed by the name of Glaſtonbury-Thorn, and is retained in many ſhrubberies by way of curioſity and variety.

[2]CRATÆGUS *Aria.*

*Aria Theophraſti, Wild Service, or White-leaf-tree.*] Cratægus with an upright large trunk, dividing upward into a branchy head, growing twenty or thirty feet high, having all the young branches ſpotted with a meally down; oval unequally-ſerrated leaves, woolly and very white underneath; and large bunches of white flowers at the ends of the branches, ſucceeded by cluſters of red berries. The leaves are about three inches long, and half as broad.

[3]CRATÆGUS *Torminalis.*

*Maple-leafed Wild Service-tree.*] Cratægus with an upright large trunk, and very branchy ſpreading head, riſing forty or fifty feet high; heart-ſhaped, ſeptangular, divaricated-lobed leaves, hoary underneath; and large bunches of white flowers at the ends of the branches, ſucceeded by cluſters of large, reddiſh-brown, eatable berries.

*Other varieties are*] With round ſerrated leaves—with round ſlightly-cut leaves.

The fruit of this ſpecies being of an agreeably acid flavour, is often ſerved up in deſerts to table; and, as the trees of the common ſort grow wild in many parts, the country people gather the fruit in autumn for market, known by the name of Service berries. The leaves are three or four inches long, and three broad.

[4]CRATÆGUS *Azarolus.*

*The Azarole-thorn.*] Cratægus with an upright trunk, branching irregularly twelve or fifteen feet high; broad, obtuſe, nearly trifid, ſerrated leaves; and large white flowers in

clusters from the sides of the branches, succeeded by large, red, eatable berries, of an acid flavour.

*Varieties are*] Azarole with strong thorns—without thorns—with jagged leaves—with double flowers.

The leaves bear some resemblance to those of the Common Hawthorn, but are much larger, with broader lobes.

5 CRATÆGUS *Coccinea.*

*Scarlet Virginia Cratægus, commonly called Cockspur-Hawthorn.*] Cratægus with an upright trunk, divided upward into a strong branchy head, rising from ten to twenty feet high; large, oval, angulated-bending, serrated, smooth leaves; and very large clusters of flowers from the sides of the branches, succeeded by pear-shaped scarlet fruit.

*Varieties are*] Scarlet Cratægus with many strong recurved thorns like a cock's spur, hence the appellation Cockspur-Hawthorn—Scarlet Cratægus without thorns.

Both the varieties are fine furniture for all ornamental plantations, as they flower plentifully, and their fruit appears beautiful in autumn and winter.

6 CRATÆGUS *Crus-galli.*

*Cockspur Cratægus, commonly called Virginia Azarole.*] Cratægus with an upright robust trunk, branching irregularly ten or fifteen feet high, armed with long sharp thorns; oval-spear-shaped, sawed, smooth leaves; and large white flowers in bunches, succeeded by dark red berries in autumn.

*Varieties are*] With pear-tree leaves—with plum-tree leaves, very long spines, and large fruit—with plum leaves, short thorns, and small fruit.

7 CRATÆGUS *Tomentosa.*

*Tomentose Gooseberry-leafed Virginia Cratægus.*] Cratægus with a shrub-like stem, branching irregularly six or seven feet high, closely armed with thorns; oval-wedge-fashioned, angular, sawed leaves, woolly underneath; and small white flowers, succeeded by yellow fruit.

8 CRATÆGUS *Viridis.*

*Green-leafed Thornless Virginia Cratægus.*] Cratægus with a thornless stem and branches; lanceolate-oval, nearly trilobate, serrated, smooth leaves, green on both sides.

The flowers of all these trees, in their common state, have a corolla of five roundish petals, mostly white, appearing principally in May and June, ripen fruit in September, which are all of the berry kind, and which, in many sorts, appear very ornamental great part of winter, till devoured by the birds.

All these trees are hardy; the first three species grow naturally in England, as well as in most other parts of Europe, the *Azarole* in France and Italy; all the others are principally of American growth, but all the sorts grow freely here in any situation in the open ground.

The first species, *Cratægus Oxyacantha*, or Common Hawthorn, in its natural state, is a most valuable tree, universally known and esteemed for its great usefulness in forming hedges for fences, commonly called quick-set hedges, and for which use there is scarce any deciduous tree so well adapted, see HEDGES; and its several varieties are of great use for ornamenting our shrubberies and wilderness-works, as they will prosper any where.

All the other species and varieties have great merit as ornamental deciduous trees, and are particularly well adapted for large shrubberies and other ornamental plantations, and to form clumps in parks; and some of the large sorts to disperse singly in parks, or extensive lawns, suffering them all to retain their own natural growth.

*Propagation, &c.*

All the species are raised abundantly from seeds in the full ground; and to continue the varieties distinct, they may be budded or grafted upon stocks of the common Hawthorn, for all the sorts will readily take upon that stock, or upon one another.

By seeds, i. e. the fruits—The Hawthorn never fails to ripen Haws abundantly, which may be collected with facility from the hedges of fields, &c. in September and October; the fruit of the two Service-trees may also be found plentifully in many places; and those of the foreign sorts also ripen in our gardens; but all the sorts may be had cheap enough of the nurserymen, and the best time to sow them is soon after they are ripe; that is, in October or November, or very early in spring, in beds of light earth, either broad-cast, or in drills, and cover them an inch and half deep; but as most of these seeds often remain in the ground till the second spring, it is therefore customary with many, previous to sowing, to bury them in a heap in a trench, in dry-lying ground, for a year, as is commonly practised to the common Haws, holly-berries, and some other stony-seeded sorts, see SOWING SEED; they will be all the while

preparing

preparing for vegetation, ſo that if buried in October, November, or December, &c. ſuffering them to lie until October or November following; then ſow them, as above directed, and they will moſtly come up the ſpring after; though it is obſervable, that thoſe ſowed at once in the beds an inch or two deep, they, by having the conſtant benefit of the ſun's influence, air, and occaſional ſhowers, generally all come up freely the ſecond ſpring after ſowing, and moſt commonly ſhoot more regular and ſtrong than thoſe of the other method.

In either method of ſowing, be careful to weed the beds, and when the plants begin to appear, occaſional watering in dry weather will be of much advantage in forwarding the growth of the ſeedlings.

In the autumn or ſpring after the plants come up, ſome of the ſtrongeſt of the quick or Hawthorn ſeedlings will be proper ſets to plant immediately for a hedge, and the reſt may either then, or the year following, be tranſplanted from the ſeed-bed in nurſery-rows, to remain a year or two, or till wanted; though when they are from one to two or three years old, they are of the moſt eligible ſize to plant for hedges. See HEDGES.

Let all the other ſeedlings be alſo tranſplanted from the ſeed-bed when a year or two old, in nurſery-rows two feet diſtance, and half that in each row, to remain three or four years, or till they are from about three to five or ſix feet high, when they will be of proper ſize for the ſhrubbery, or any other plantation.

By budding, &c.—Any of theſe trees may alſo be propagated with facility by that method, which is the moſt certain way to continue the varieties diſtinct; all the ſorts take upon one another, but the Hawthorn ſtock of two or three years old is moſt commonly uſed, and the operation is to be performed in the uſual manner. See INOCULATION, &c.

Layers of the youngeſt branches of moſt of the ſorts in autumn, will often be rooted in a year or two.

Cuttings of the young ſhoots will alſo ſometimes grow.

CREPIS, Baſtard Hawkweed.

It furniſhes herbaceous ornamental plants for the pleaſure-ground, conſiſting principally of two beautiful annuals, riſing a foot and half high, having their branches terminated by ligulated compound red and yellow flowers.

Claſs and order, *Syngeneſia Polygamia Æqualis.*

*Characters.*] CALIX, a compound flower, having a double general cup; the outer one ſhort, patulous, and deciduous; the interior one oval, furrowed, have numerous ſcales, and permanent. COROLLA, numerous, monopetalous, ligulated, hermaphrodite florets, five parted at top, and imbricated. STAMINA, five ſhort filaments, and cylindric antheræ. PISTILLUM, a germen, ſmall ſtyle, and two reflexed ſtigmas. PERICARPIUM none. SEMEN, one ſeed crowned with down under each floret.

There are ſeveral ſpecies, but not more than two of any great merit, or that are commonly retained in the Engliſh gardens, which are annuals, and called ſimply Hawk-weed, but ſhould be Baſtard Hawk-weed.

The ſpecies of our gardens are,

[1]CREPIS *Rubra.*

*Red flowering Baſtard Hawkweed.*] Crepis with ſpear-ſhaped, jagged, radical leaves, ſpreading on the ground; between them the flower-ſtalk, dividing into many erect branches a foot and half high, having oblong, lyre-ſhaped, amplexical leaves, and every branch crowned by a large, red, compound flower.

[2]CREPIS *Barbata.*

*Barbated Yellow Baſtard Hawkweed* ] Crepis with long, ſpear-ſhaped, indented, radical leaves; between them the flower-ſtalk, dividing into erect branches a foot and half high, garniſhed with ſmall, ſpear-ſhaped, cloſe-ſitting leaves; and all the branches terminated by compound yellow flowers, with dark purple middles, having the involucrum longer than the calix, ſquamous and briſtly.

*Varieties of this.*] With deep yellow flowers —with ſulphur-coloured flowers—both ſorts having dark purple diſcs.

The flowers of all the ſorts are large, compound, of many flat florets ſpread over one another imbricatum, and, when fully blown, appear like a radiated flower, appearing in June, July, and Auguſt, extremely conſpicuous and beautiful, and are ſucceeded by plenty of ſeed, from which, if permitted to ſcatter on the ground, many plants will riſe without trouble.

Theſe plants are pretty ornaments to the borders and other compartments of the pleaſure-ground, and they grow freely in any common ſoil of a garden.

*Propagation, &c.*

The plants being annual, they muſt be raiſed annually from ſeed, which may be ſown

ſown either in autumn or ſpring; the rule is, that by ſowing in autumn, i. e. in Auguſt or September, the plants come up the ſame ſeaſon, ſtand the winter, and flower in May, June, and July; thoſe ſown in ſpring flower in July, Auguſt, September, and October.

At either of theſe ſeaſons of ſowing, it is proper to ſow them at once in the places where you deſign them to flower; therefore, in different parts of the borders, in patches at five, ten, or fifteen feet diſtance, ſow the ſeeds, five or ſix in a patch, half an inch deep, placing ſticks for marks; and when the plants are two or three inches high, thin them to three or four in each hole or patch. See HARDY ANNUALS.

CRESCENTIA, Calabaſh-tree.

It furniſhes one ſpecies of the tree kind, admitting of ſeveral varieties, all of the Weſt-Indies, &c. and retained here in our ſtoves for variety; derives its name from its fruit, called Calabaſh, which is ſometimes as large as a man's head.

Claſs and order, *Didynamia Angioſpermia*.

*Characters.*] CALIX is monophyllous, and divided into two roundiſh ſegments. COROLLA is monopetalous and irregular, having a curved gibbous tube, and erect limb, five-parted at the brim. STAMINA, two long and two ſhort filaments, and incumbent didymous antheræ. PISTILLUM, a pedicellated germen, filiforme ſtyle, and capitated ſtigma. PERICARPIUM, a large, baccaceous, oval, or bottle-ſhaped fruit, with a thin hard ſhell, and many ſeeds.

The ſpecies is,

CRESCENTIA *Cujete*.

*Common Creſcentia, or Calabaſh-tree, formerly Cujete.*] Creſcentia with an upright, robuſt, whitiſh trunk, divided at top into a large, ſpreading, regular head, from ten to thirty feet high, garniſhed with large, oblong, entire leaves, and greeniſh yellow flowers on long foot-ſtalks from the ſides of the branches, ſucceeded by large ſhell fruit of different forms and magnitude, in different varieties.

*Varieties are*] Creſcentia with long ſpear-ſhaped leaves, narrow at both ends—with broad oval leaves—with large oval fruit—with ſmall round fruit—bottle-ſhaped fruit.

Theſe fruit are of different magnitudes, from the ſize of a good orange to that of a man's head, or larger, all of which fruit have a hard and thin ſhell, filled with pulp and ſeeds; the pulp is ſoft, ſour, and unſavoury, and ſeldom eaten.

Theſe trees in this country, being always retained in pots in our ſtoves, aſſume a ſhrub-like growth, and I believe very few, if any at all, have yet flowered in theſe parts.

In Jamaica, Barbadoes, and other parts of the Weſt-Indies, the trees growing as large and ſpreading as an apple-tree, bear abundance of fruit, the ſhell of which, having the pulp ſcooped out, is as thin and light as brown paper, and ſome of the largeſt capable of holding ſix or eight pints of water, &c. and are chiefly uſed for liquor and eating utenſils.

All the varieties are propagated by ſeeds procured from abroad in the ſhells; as ſoon as they arrive take out the ſeeds, and ſow them in pots of light rich earth, and plunge them in a bark-bed; and when the plants are two or three inches high, plant them out in ſeparate ſmall pots, plunging them alſo in a hot-bed, or the bark-bed in the ſtove, where they muſt always remain, giving them the neceſſary care of other tender exoties.

CRINUM, Aſphodel Lily.

This genus furniſhes four beautiful flowery perennials of the tuberous and bulbous-rooted tribe for the green-houſe and ſtove, producing erect firm ſtalks two or three feet high, crowned each by a large umbellate cluſter of ſpathaceous, monopetalous, long, funnel-ſhaped flowers, blue, white, &c.

Claſs and order, *Hexandria Monogynia*.

*Characters.*] CALIX, a diphyllous, oblong, ſpatha-like involucrum, becomes dry and reflexed. COROLLA, monopetalous and funnel-ſhaped, having a long tube, the top deeply divided into ſix ſpear-ſhaped, concave, obtuſe, reflexed ſegments. STAMINA, ſix very long filaments, and oblong incumbent antheræ. PISTILLUM, a germen in the bottom of the corolla, ſlender ſtyle, and trifid ſtigma. PERICARPIUM, a ſuboval, trilocular capſule, having ſeeds.

The ſpecies are,

[1]CRINUM *Africanum*.

*African Aſphodel Lily, or Tuberous Hyacinth.*] Crinum with a root compoſed of many tuberous fibres, collected into a head at top, crowned by ſpear-ſhaped, plane leaves, their baſes embracing each other, and ſpread two ways; and from one ſide, round hollow flower-ſtalks two or three feet high, ſurmounted by a large umbellate cluſter of bright blue flowers.

[2]CRINUM *Aſiaticus*.

*Aſiatic Aſphodel Lily.*] Crinum with a large bulbous root, crowned by long carinated leaves;

two or three feet in length, embracing at their baſe, and ſpread every way; and from one ſide, round hollow flower-ſtalks two or three feet high, terminated by large umbellate cluſters of white odoriferous flowers, having very long tubes, and long ſegments much reflexed.

[3]CRINUM *Americanum.*

*American Evergreen Aſphodel Lily.*] Crinum with a bulbous fleſhy root, crowned by long, broad, plane leaves, embracing each other in their baſe; and flower-ſtalks two feet high, terminated by large, umbellate cluſters of white odoriferous flowers, having broad ſegments, having the tops formed on the inſide like finger-nails.

[4]CRINUM *Latifolium.*

*Broad-leafed Aſiatic Crinum.*] Crinum with a large fleſhy root, crowned by oval-lanceolate, plane, acuminated, cloſe-ſitting leaves, and flower-ſtalks two feet high, terminated by large umbellate cluſters of white fragrant flowers, ſtriped with purple.

The roots of all theſe plants are perennial; the ſtalks annual, round, thick, ſucculent, hollow, and univerſally crowned by a ſort of ſpatha protruding the umbels of flowers, each ſeparate flower formed of one long, tubular, ſix-parted petal, of great beauty, appearing at different times of the year, but more commonly in autumn, often continuing till ſpring, frequently ſucceeded by capſules, eſpecially the bulbous ſorts, in which are produced ſmall bulbs, which, planted, become proper plants.

The firſt ſort is for the green-houſe, and the other three for the ſtove, retaining them always in pots of rich light earth, obſerving to ſhift them every year after flowering, for the ſake of freſh earth, and ſeparating the off-ſets, giving occaſional waterings ſummer and winter.

*Propagation.*

The firſt ſort is propagated by off-ſets from the ſides of the main roots the end of June and July, turning them out of the pots, and ſo either ſlip or cut off the off-ſets, as you ſee occaſion, planting each off-ſet in a pot of light rich earth, and place them in the ſhade five or ſix weeks, giving water, and they will probably flower the following September, which, toward the end of October, place in the green-houſe for the winter.

The ſecond, third, and fourth ſorts, are propagated by the off-ſets of their roots, or by the ſmall caulin bulbs of their capſules; but the root off-ſets flower ſooneſt, planting them in pots of rich earth, and plunge them in the bark-bed of the ſtove until they begin to flower, when they may either be placed upon the ſhelves, or permitted to remain in the bed, as convenient.

It is proper to ſhift or tranſplant the roots of all the ſorts every year or two, at their period of reſt, for the ſake of freſh earth, and ſeparating the off-ſets.

CRITHMUM, Samphire.

The plants are hardy, herbaceous, ſucculent perennials, both eſculents, and for variety, riſing two feet high, terminated by yellow umbels.

Claſs and order, *Pentandria Digynia.*

*Characters.*] CALIX, umbelliferous flowers, having a many-leafed general involucrum. COROLLA, a uniform general umbel, the florets of five petals. STAMINA, five filaments, and roundiſh antheræ. PISTILLUM, a germen under each floret, two ſtyles, and reflexed ſtigmas. PERICARPIUM none. SEMINA, a compreſſed two-parted fruit, and two ſeeds.

The ſpecies are two, but the principal one is,

CRITHMUM *Maritimum.*

*Common Maritime Samphire.*] Crithmum with a fibrous penetrating root; thick, ſucculent, branchy ſtalks, two feet high; winged fleſhy leaves, of many ſmall, ſpear-ſhaped, fleſhy lobes; and round yellow umbels of flowers at the top of the ſtalk and branches.

The plants grow naturally on the ſea-coaſts among the gravel and rocks; its leaves are an excellent pickle, uſed for ſauces, and are by many eaten raw in ſallads, is of a ſaltiſh reliſh, palatable, and comfortable to the ſtomach, and is brought by the ſimplers in great plenty to the London markets.

To propagate this plant in gardens, either as an eſculent, or for variety, ſow the ſeeds in ſome gravelly, ſandy, or rocky ſituation, half an inch deep; the plants will come up, and endure many years.

They may alſo be encreaſed by parting the roots.

CROCUS, Saffron, but commonly called *Crocus.*

The plants are very low, flowery, ornamental perennials, of the bulbous-rooted tribe, valuable for ornamenting the fronts of our borders at early ſpring and late in autumn; for there are vernal and autumnal ſorts, of each many varieties, all of which are acaulis, ſo that the flowers and leaves riſe directly from

from the root, attaining only from about three to five or ſix inches high.

Claſs and order, *Triandria Monogynia.*

*Characters.*] CALIX, a monophyllous ſpatha COROLLA is monopetalous, with a long erect tube, and the limb deeply divided into ſix equal, oblong, erect ſegments. STAMINA, three filaments ſhorter than the corolla, and arrow-pointed antheræ. PISTILLUM, a roundiſh germen under the corolla, ſlender ſtyle, and three twiſted ſtigmas. PERICARPIUM, a roundiſh, trilobate, trilocular capſule, containing roundiſh ſeeds.

Modern botaniſts admit of but one real ſpecies of Crocus, which however comprehends many beautiful varieties, and the following deſcription of the original ſpecies ſerve for all, in reſpect both of the root, manner of growth, mode of flowering, general habit, and ſtature of the plants; only ſometimes by culture, the bulbs will encreaſe in magnitude, the leaves in breadth, and the flowers larger; ſo that the main difference of the numerous varieties is in the colourings of the flower, and the times of flowering, ſpring and autumn; obſerving, that although the autumnal Crocus is probably the original varieties, the ſpring Crocuſes are conſiderably the moſt numerous.

They may be divided into two claſſes, the autumnal and ſpring flowering.

The ſpecies is,

CROCUS *Sativa.*

*Cultivated Saffron, or Crocus.*] Crocus with a ſmall, roundiſh, brown, bulbous root, compreſſed at bottom; and directly from the root iſſue many long, narrow, deep-green leaves; and amidſt them the flowers, all protruded from a thin, univalvular, radical ſpatha; the tube of the flower long, ſtanding on the root, and ſerving as a foot-ſtalk to the limb or upper part, which is erect, ſix-parted, widens gradually upward, and grows from about three to five or ſix inches high.

Varieties of the *Crocus Autumnalis* are as follow: the firſt of which is the original Crocus, or Saffron.

*Saffron Crocus (Crocus Officinalis)*—A long-tubed blueiſh-purple flower, having its three *ſtigmata* of a fine reddiſh-golden colour; which part is the officinal Saffron: hence the name.

Autumnal ſmall blue Crocus—deep blue—ſky-blue——whitiſh-blue——many-flowered whitiſh-blue—purple—large ruſh-leaved purple—and autumnal white Crocus—autumnal yellow Crocus.

All theſe varieties of *Crocus Autumnalis* flower about the beginning of October, but never furniſh ſeeds here; they are very beautiful in patches in the fronts of borders, or in beds by themſelves, and very proper autumnal ornaments for gardens of every extent, as coming into full bloom at a ſeaſon when moſt other flowers are on the decay; and they grow freely in any common ſoil, and, although they produce no ſeeds in England, they encreaſe in tolerable plenty by off-ſets of the roots.

The flowers of theſe commonly appear before the leaves, which, when the flowers fade, continue their growth, remain all winter, and decay in May following, when is the time to remove the roots, which ſhould be every two or three years.

Varieties of Vernal or Spring Crocus are,

*Yellows.*] Small yellow Crocus—large yellow Crocus—golden-yellow Crocus—yellow black-ſtriped cloth of gold Crocus—yellow purple-ſtriped Crocus—double cloth of gold Crocus.

*Whites.*] White Crocus—white purple-ſtriped Crocus—white purple-bottom Crocus——white black-ſtriped Scotch Crocus——whitiſh cream-coloured Crocus—whitiſh aſh-coloured Crocus—little narrow-leafed white Crocus—white blue-ſtriped Crocus.

*Blues.*] Small blue Crocus—large deep blue Crocus—blue purple-ſtriped Crocus—blue violet-ſtriped Crocus—pale-blue purple-bottom Crocus.

*Purples.*] Small purple Crocus—large purple Crocus—ſtriped purple Crocus.

*Polyanthus Crocus*—having many purple-violet white-ſtriped flowers.

All theſe beautiful varieties of *Crocus Vernalis* flower in February, March, and April, and ripen ſeeds in May; they are all very ornamental ſpring flowers, and valuable for their early appearance, when very few other flowers are to be ſeen, and are ſo hardy, that they will grow almoſt any where, and rear their flowery heads even when chilling colds prevail, and, where duly diſpoſed along the fronts of borders or clumps, make a fine ſhew a month or ſix weeks; and they encreaſe abundantly by off-ſets of their roots, as well as furniſh ſeed for raiſing new varieties.

The flowers and leaves of all theſe ſpring varieties generally riſe nearly together, though the flowers rather appear firſt; the leaves continue their growth till May or June, when they wither, and this is the time to remove the

roots, which is neceſſary every two or three years, to ſeparate the numerous off-ſets. See BULBOUS ROOTS.

*Planting, Culture, Propagation, &c.*

In reſpect to the planting and culture of all the varieties, both of the autumnal and vernal Crocus, for ornament in gardens, they may all be planted in any of the common borders, &c. without any other preparation than common digging, and a blunt-ended dibble is to be uſed in planting: the following is the general management of both the claſſes of varieties, i. e. autumnal and ſpring-flowering.

Autumnal Crocuſes —Theſe varieties may either be planted in beds by themſelves, in rows nine inches diſtance, or in patches along the fronts of borders, as directed for the ſpring Crocuſes.

The bulbs for planting may be had of all the nurſerymen for two or three ſhillings per hundred.

The beſt ſeaſon to plant them is in July or Auguſt, obſerving, in either of the above methods of planting, to ſet the roots about two inches deep; they will flower in October following, and continue to flower annually at the ſame ſeaſon, obſerving, they may remain undiſturbed three years, when it is proper to take them all up, to ſeparate the ſmall off-ſets, and freſh dig the ground, &c. which ſhould be done in June, ſelecting the largeſt and roundeſt roots, to plant for the future bloom; theſe ſhould be planted again early in Auguſt, that they may blow in due perfection the following October.

Their general propagation is by off-ſets, as above; and from a few bulbs of each ſort you will ſoon have plenty, by means of an annual encreaſe.

Vernal or ſpring Crocuſes.—Theſe are often planted in a ſingle row cloſe along the edges of beds or borders; but to have them effect as great a variety, and as grand a ſhew, as poſſible, I would adviſe planting them in patches of different-coloured varieties alternately, both along the front of the borders, and towards the middle, or in the fronts of ſhrubbery clumps; ſo in patches of five or ſix inches diameter, plant five, ſix, or eight roots; and the diſtance of the patches may be, for thoſe in the front, from eighteen inches to three feet diſtance, and thoſe towards the middle of the borders ſhould be at the diſtance of five or ſix feet, and, in general, about two inches deep.

The bulbs of all the varieties are ſold by the nurſerymen and ſeedſmen, from ninepence to three ſhillings per hundred, according to the ſorts; or a hundred, including ſome of every ſort, for three ſhillings.

The ſeaſon for planting them is September, October, and November, though it may be performed, any time in open weather, from September to February; obſerving, however, thoſe planted before Chriſtmas flower conſiderably the ſtrongeſt, obſerving the method of planting above directed.

The roots may remain two or three years without being removed, though, as the roots in that time will be encreaſed by their off-ſets into large bunches, it is proper to take them up to ſeparate them; the proper time is May or June, when the leaves wither, obſerving to ſeparate the large from the ſmaller; and after being dried and cleaned, put them up till the planting ſeaſon, as above-mentioned, when the larger ones are to be planted in the borders, as before, and the ſmall ones, if wanted, may be planted in a bed, in rows ſix inches aſunder, to remain a year or two to grow larger, when they will be fit for your borders, or for ſale.

The propagation of all the tribe of ſpring Crocuſes are effected plentifully by off-ſets, as above obſerved; and from a few bulbs of each variety, you may in two or three years have a large encreaſe; and thoſe who incline to try for new varieties may have recourſe to ſeed, as directed for *Colchicums*.

In moſt gardens it is cuſtomary to cut off the long green leaves of the Crocus ſoon after the flowers decay, but this is injurious to the growth of the bulbs, and is done principally becauſe the leaves, becoming long and ſtraggling, have a littering appearance at the edge of the borders; but if this appearance could be diſpenſed with, and the leaves permitted to remain till they wither, it will nouriſh and prove beneficial to the roots, as will be obvious in their future bloom.

CRUCIFORMIS *Flos*, a Cruciforme, or Croſs-ſhaped Flower; a flower compoſed of four equal petals, which ſpread at top on their claws four different ways, in form of a croſs; ſtock-gilliflower, rocket, candy-tuft, lady's-ſmock, and honeſty, furniſh examples.

CUCUMIS, Cucumber, and the *Cucumis Melo*, the Melon.

The Cucumber and Melon, though vaſtly different in the external habit of their fruit, the characters of their flowers are exactly the ſame;

ſame; ſo the plants are conſequently both ſpecies of the genus *Cucumis*, very tender annuals of trailing growth, valuable for their moſt excellent fruit.

Claſs and order, *Monœcia Syngeneſia.*

*Characters.*] CALIX, male and female flowers apart on the ſame plant, having each a monophyllous bell-ſhaped cup, terminated by five awl-ſhaped briſtles. COROLLA, is in both ſexes monopetalous, bell-ſhaped, divided into five oval rough ſegments, and adheres to the calix. STAMINA, in the males, three very ſhort connivent filaments inſerted into the calix, two of them bifid at top, and narrow antheræ, creeping upward and downward, adhering to the outſide. PISTILLUM, in the females, an oblong germen under the corolla, very ſhort ſtyle, crowned by three thick, gibbous, tripartite ſtigmas. PERICARPIUM, a fleſhy, oblong, trilocular fruit, and numerous, oval, acute, compreſſed ſeeds.

The Cucumber and Melon have, by moſt authors heretofore, been treated as diſtinct genera; but the Linnæan ſyſtem determines them to be of the ſame genus, and in which we muſt therefore alſo range them, though, for diſtinction ſake, under two ſeparate heads; firſt, the Cucumber, *Cucumis Sativa*; ſecond, the Melon, *Cucumis Melo.*

*Firſt Head.*

*Cucumis Sativa, or Garden Cucumber.*

Of the Cucumber there is but one real ſpecies, but of which are ſeveral curious and valuable varieties of the fruit; and as to the plants, they are herbaceous trailing annuals and exotics of moſt delicate tender temperature, unable to endure the open air here, except about three or four months in the heat of ſummer; and to raiſe them in early perfection, requires the aid of ſubſtantial hotbeds, under frames and glaſſes; and the culture of them, at an early time, being eſteemed a moſt curious branch of gardening, it excites an ambition in moſt gardeners to excel each other in their production as early in the ſpring as poſſible.

The ſpecies is,

CUCUMIS *Sativa.*

*Cultivated, or Common Cucumber.*] Cucumis with roots compoſed of numerous, long, ſlender, white fibres; long ſlender ſtalks, very branchy at their joints, trailing on the ground, or climb by their claſpers, adorned at every joint by large angular leaves, on long erect foot-ſtalks; and numerous, monopetalous, bell-ſhaped, five-parted, yellow male and female flowers, at the ſame, or different joints, the females ſucceeded by oblong rough fruit.

Varieties are as follow:

*Common Rough Green Prickly Cucumber*—A middle-ſized fruit about ſix or ſeven inches long, having a dark-green rough rind, cloſely ſet with very ſmall prickles; the plant is of the hardieſt ſort, bears plentifully in ſummer, but does not ſhow fruit early, ſo is not proper for frames.

*Short Green Prickly Cucumber*——A ſhort fruit three or four inches long, the rind rather ſmooth, and ſet with ſmall black prickles; is valuable principally for being one of the hardieſt and early ſorts; that is, as to early, the plants frequently begin to ſhew fruit at the firſt, ſecond, or third joint, whereby we may expect fruit in perfection much ſooner than from ſuch plants that do not ſhew fruit till they advance ſeveral joints in length.

*Long Green Prickly Cucumber*—A long handſome fruit, from about ſix to eight or nine inches long, rather thinly ſet with prickles; the plants are remarkably good bearers, and as there is an early and late ſort, it is conſiderably the beſt variety of Cucumber for the main crops, both in the frames and handglaſs, as well as in the open ground for picklers.—Variety of this with white fruit.

*Early Green Cluſter Cucumber*—A ſhortiſh fruit, remarkable for growing in cluſters, and appearing early.

*Long Smooth Green Turkey Cucumber*—The plants are ſtrong growers, with very large leaves, and long, ſmooth, green-rinded fruit, without prickles, obtaining from ten to fifteen inches in length.

*Long Smooth White Turkey Cucumber*—The plant a ſtrong grower, and ſmooth-rinded fruit, without prickles, from ten to fifteen inches long.

*Large Smooth Green Roman Cucumber*——A ſtrong growing plant, and very large, long, ſmooth, green fruit.

*Long White Prickly Dutch Cucumber*——A white fruit, eight or ten inches long, ſet with ſmall black prickles; the plants but bad bearers in England.

Of the above varieties, the firſt four are conſiderably the beſt bearers in this country, and the only ſorts to be depended on, both for the early and main crops, and the Long Green Prickly ſort moſt of all; the laſt four varieties being, for the general part, but indifferent bearers, are improper to be employed

either for an early, or any general ſummer crop; but as the fruit is ſingularly large and beautiful, a few plants of each ſort ſhould be admitted in the ſummer crops, under the hand-glaſſes, &c. or in the common ground, among the late crops.

All the above ſorts, though only varieties, yet by care in raiſing each reſpective ſort in ſeparate beds, or ſo as the farina of the flowers of the different ſorts may not impregnate each other, they will continue tolerably permanent; but without this care they in time will vary to one another.

The flowers of all the varieties of *Cucumis* are monoecious, i. e. male and female apart on the ſame plant, either at different joints, or both ariſing at the ſame joint; the male flowers are thoſe commonly, but erroneouſly, called, falſe bloſſoms, and are often pulled off; but they are ſo far from being falſe or uſeleſs, that without their vicinity and aſſiſtance, no fruit can be expected; for they contain upon their antheræ the *pollen*, or ſecundating golden powder, ſo eſſentially neceſſary for the impregnating the ovary of the female flower, by which only the fruit ſets, ſwells to maturity, and produces fertile ſeeds: both male and female flowers are diſtinctly obvious, both before and after they open; the male flower ſtands immediately upon the top of its foot-ſtalk, without any appearance of germen or fruit under it; the female flower diſcovers the germen or embrio fruit immediately under its baſe, ſo that the flower ſits cloſe upon the top of the fruit, as is apparent even from its firſt iſſuing from the branch, when not ſo big as a very ſmall barley-corn: from the firſt appearance of the miniature fruit till its maturity, i. e. fit to cut for the table, it takes up generally from about eighteen to one-and-twenty days growth.

Cucumbers at an early ſeaſon are highly valued, and are eſteemed almoſt the greateſt rarity of a garden; principally, becauſe the plants being of ſo extremely tender and delicate nature, as to require conſiderably more attention and ſkill in their early culture than any other eſculent of our kitchen-garden collection, except the Melon, which is nearly of the ſame temperature, and both of which, in the article of hot-bed culture, afford opportunities for a gardener to diſplay his abilities, and raiſe his reputation, as eminent in his profeſſion.

What is to be underſtood by early Cucumbers, is principally ſuch that arrive to perfection in February, March, and April, and is performed by hot-beds, under frames and glaſſes, begun about Chriſtmas; though, to have Cucumbers in May, June, and July, the aid of hot-beds and glaſſes are alſo requiſite, made at, or from about Candlemas till May; but in the beginning of June, when the weather becomes warm and ſettled, the ſeeds will grow in the full ground, and the plants will bear the full air till the end of September, after which time the cold nights ſoon deſtroy them; ſo that if the fruit is required after that time, the plants muſt be protected by frames, &c.





*Obſervations on their General Culture.*

As to the propagation of Cucumbers, the plants being annual, muſt of courſe be raiſed every year from ſeed, and the ſeaſon and order of ſowing is, either in hot beds, any time from about Chriſtmas till May, or in the full ground in the latter end of May, or beginning of June, obſerving, that, as the plants rarely ſucceed in the open air before June, all intended to be raiſed before that time require more or leſs artificial heat, and ſhelter of frames, glaſſes, &c.

By artificial heat in the culture of theſe plants, may be comprehended not only that of dung hot-beds, the moſt common method, under common garden-frames and lights, hand or bell-glaſſes, &c. but alſo that of ſtoves, effected by bark-bed heat and actual fire; and in which departments the plants may be raiſed at almoſt any ſeaſon: dung hot-beds, however, under frames, &c. are the moſt ſucceſsful, and beſt for any general early crop; but we ſhall exhibit both methods in their proper place.

The particulars to be materially obſerved, relative to the times of ſowing and having Cucumbers for uſe, is; to have Cucumbers early, i. e. in perfection in March and April, it is performed by hot-beds, under frame and glaſſes, begun about Chriſtmas, or between that and Candlemas; or to have them come in for uſe in May, the ſame aid is alſo requiſite, beginning in February or March; and even when they are not required till June and July, the aid of moderate hot-beds are likewiſe neceſſary, made in April, or beginning or middle of May, either under frames, or hand or bell-glaſſes, or thoſe made in May might be be covered with paper lights, in default of others; but for late crops, to come into uſe in Auguſt and September, no artificial

ficial heat nor covering is neceſſary, as, in the end of May, or beginning of June, when the weather is become ſettled and warm, the ſeed may be ſown in the full ground, and the plants will come up, and attain a bearing ſtate in two months; but to have Cucumbers from the earlieſt to the lateſt period, ſome endeavour to have them fit to cut about Chriſtmas, by beginning with a moderate hot-bed in October; and ſome are ambitious of having them for the table the year round, ſo continue ſowing every month in the year: it is, indeed, often eaſier to have Cucumbers at Chriſtmas, than a month or two later; and it is much eaſier to have them in April and May, than in February or March, and leſs dung for hot-beds, as well as leſs attendance, is required: however, to have good general crops from ſpring till autumn, three different principal crops are generally raiſed at three different times, from about Chriſtmas or Candlemas till June; the firſt, or earlieſt, to be in hot-beds, under frames and glaſs lights; the ſecond, or middle crop, alſo in hot-beds, under hand or bell-glaſſes, &c. and the third, or lateſt crop, is in the common ground; each of which crops is exhibited ſeparately.

By the above hints you will readily judge of the time to begin Cucumber-framing, according to the times the Cucumbers are required for uſe, or according to your convenience in reſpect to frames, glaſſes, dung for hot beds, mould or earth, &c. for unleſs you are properly accommodated with theſe materials, you ſhould never attempt having Cucumbers very early; for, as above hinted, it is much eaſier to have them in April, May, and June, than in February and March.

The principal materials neceſſary in the early culture of theſe plants in dung hot beds, under frames and glaſſes, &c. are as follow.

For the early crops, frames and lights of two or three different ſizes, for the ſame number of different hot-beds; that is, a ſmall frame of one light for the ſeed-bed, another of larger dimenſions, or a two-light one, for the pricking out or nurſery-bed, and one or more two-light, or three light-frames, for the final or fruiting hot-bed; each frame furniſhed with glaſs lights perfectly wind and water-tight. See FRAMES.

For the middle crops, for hot-beds made in April and May, hand-glaſſes, either the ſquare ones laid in lead, or bell-glaſſes, or, in default of theſe, oiled paper frames. See HAND-GLASSES.

Horſe ſtable-dung for making the hot-beds is a principal article; procure ſuch that is freſh, full of heat, neither too long and ſtrawy, nor too ſhort, but a due mixture of both; one cart-load, or twelve or fifteen wheel-barrows full to each light, or about thirty or forty to each three light frame, making an allowance alſo of a due portion for occaſional linings; all of which ought to be previouſly prepared by caſting it up in an heap about a week, or ten or twelve days, to forward the whole to an equal and regular fermentation, and that the violent burning quality, rank ſteam, and unwholeſome ſtench may evaporate; and if turned over once or twice, it will be more effectually prepared. See HOT-BEDS.

Earth for moulding the beds.—This ſhould be very rich, moderately light and dry, having been previouſly prepared ſome months in a compoſt heap, ſee COMPOST; or good light kitchen garden earth, enriched with rotten dung of old hot-beds, is a proper ſoil, and, if blended with a moderate portion of fine, light, freſh loam, properly incorporated, it will invigorate its vegetative quality, preparing the whole in an heap, as above, three or four months, at leaſt, before uſing it; likewiſe obſerving, that before uſing the mould for the hot-beds, a due quantity ſhould be wheeled into a dry covered ſhed, open to the ſun and free air, to be defended for a fortnight or three weeks, to have it of a moderately dry temperament, which is moſt neceſſary in early framing; and, when the mould is to be uſed, it is not adviſeable to ſcreen it, only clear out large ſtones, and break the clods as ſmall as poſſible with the ſpade, as ſifting or ſcreening would render it too compact for the tender fibres; beſides it is apt to bind, and by lying too cloſe to confine the ſteam, is more apt to burn at bottom, by the heat of the dung of the hot-bed.

Mats of baſs, reeds, or ſtraw, are neceſſary for covering the glaſſes of the hot-bed on nights, and all bad weather; but baſs mats are the moſt convenient and effectual covering. See MATS.

Small pots (thirty-two's and forty-eight's) are alſo neceſſary in early Cucumber culture, both for ſowing the ſeed in occaſionally, and for pricking the ſeedling plants in, three or four in each pot, whereby the plants may be occaſionally removed in pots, if neceſſary, from one hot-bed to another, to forward them; and alſo be more readily tranſplanted for good into the fruiting hot-bed, with the whole ball

ball of earth of each pot about their roots, ſo as not to feel their removal; and each pot of plants ſerves for one light, that is, three pots for a three-light frame.

As to the ſituation proper for the early culture of theſe plants in hot-beds, chuſe a place that fronts the ſouth, and is open to the whole day's ſun; and, if poſſible, where the ground is dry, or, at leaſt, where water is not apt to ſtand; if of a gentle declivity the better, and if encloſed, either wholly, or on the north, and eaſt, and weſt ſides, with a reed hedge or paling, to break the winds, it will be a particular advantage.

Dig no trench, as often practiſed, wherein to make the bed, eſpecially in early work, but make it entirely on the ſurface of the ground, being proper both to preſerve the bottom from being chilled by ſtanding water, and that the whole of the bed, from the very bottom, may receive the benefit of linings. If the ground is wet, or water apt to ſtand in winter, I would adviſe rather to raiſe the part gradually higher than the general level, that the moiſture, or falling water, may run away from the bed.

For the latter crops, raiſed in the open ground in June, nothing more is neceſſary than ſowing the ſeed half an inch deep in a rich ſoil; the plants will come up, and bear plentifully in Auguſt and September.

With reſpect to ſeed; in the choice of this for early crops, you will of courſe procure that of the early ſhort or long prickly ſorts; the latter is beſt for any general crop; and if you ſave the ſeed yourſelf, it is of importance to ſave it from ſome of the earlieſt fruit, that appear at the firſt, ſecond, and third joint of the main runner; and this ſeed, if poſſible, ſhould be, at leaſt, two years old before you ſow it, but if three or four the better, becauſe plants raiſed from new ſeed are apt to fly luxuriantly into vine, without ſhewing fruit in any reaſonable time, ſo are conſequently improper for early work; but if you are neceſſarily obliged to uſe new ſeed, endeavour to prepare it, by keeping it three or four weeks in your breeches pocket, previous to the time of ſowing, the drying heat of which will diveſt it of part of its luxuriant quality.

We now proceed to the culture of the different crops; and as the early culture, in hot-beds, of theſe plants and Melons, requires the gardener's atteution more than that of moſt other plants, we will enlarge on that article, ſo as to exhibit the whole proceſs according to real practice.

*Their early Culture in Frames in the Seed and Nurſery-bed.*

The time to begin the culture of early Cucumbers in frames is to be according to the foregoing obſervations, but ſome time between Chriſtmas and Candlemas is the moſt common ſeaſon to begin that work.

In the culture of early Cucumbers, it is proper, where there are good accommodation of frames and hot dung, to forward the firſt crop in three different hot-beds; a ſmall one for a one-light frame, in which to ſow the ſeed, and raiſe the plants a few days old; a ſecond, of larger dimenſions, for a large one-light, or a two light frame, by way of nurſery-bed, in which to prick the plants from the ſeed-bed into pots, to remain three weeks or a month, till their two firſt rough leaves are two or three inches broad, and when the plants have formed one joint; then to be tranſplanted with the balls of earth about their roots into a third and final hot-bed, to remain to fruit; the planting in this laſt bed gardeners call ridging out; however, if the ſeed-bed is made ſubſtantial for a large one-light, or a moderate two-light frame, it is very poſſible, by aid of occaſional linings, both to raiſe the plants, prick them down, and continue them in the ſame bed till large enough for the fruiting hot-bed.

Proceed therefore to prepare the ſeed hot-bed according to the above rules, procuring for this purpoſe hot dung, in quantity, quality, and preparation, as before directed; which being ready, then, with four ſtakes, ſet out on the ground the proper dimenſions of the bed, according to that of the frame, allowing for the bed to be rather two or three inches wider on every ſide: begin the bed by laying ſome of the longeſt dung in the bottom, afterwards take it as it comes to hand, mixing the ſhort and long well together, and ſpread it regularly on the bed, beating it firmly down with the fork as you go on, till raiſed to the proper height; obſerving, if you intend it only juſt to raiſe the plants, two feet and a half is high enough; but if deſigned both to raiſe and forward the plants large enough for the fruiting-bed, it is proper to make it three feet ſix inches high at leaſt; or, if the dung conſiſts of very long litter, four feet height in dung is not too much, ſince it will ſettle almoſt a foot in a week's time. See HOT-BEDS.

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As ſoon as the bed is made, ſet on the frame and glaſs, keeping it cloſe a day or two to draw up the heat; then tilt the light behind, for the ſteam to paſs off.

In ſix, eight, or ten days, according to the ſubſtance of the bed, the vehement heat will begin to abate, when you may earth the bed with the prepared mould, before-mentioned, five or ſix inches thick; and next, or the ſame day, as ſoon as the earth is warm, ſow the ſeed, drilling it in near half an inch deep.

But if you are in haſte to forward your plants as much as poſſible, or that you would uſe only one hot-bed both for the ſeed and nurſery-bed, let the bed be made ſubſtantial, as before obſerved, for the largeſt one-light, or for a two-light frame, according to the quantity of plants required; ſo that by ſowing the ſeed in ſmall pots (thirty two's) you may uſe the bed the ſame, or next day after it is made, as ſoon as it begins to heat, covering it all over with any ſort of dry earth, or with old tan five or ſix inches thick, filling ſome pots with rich mould, and plunge them a little in the earth, &c. and next day the earth in them being warm, ſow fifteen or twenty ſeeds in each; but obſerving, if there is danger of burning, draw up the pots more or leſs in proportion, as you ſee it neceſſary, to prevent the earth, &c. from being burned; and in about a week the plants will be up and fit to prick in pots, and by which time the bed will be arrived at a moderate heat.

The ſeed however being ſowed in either method, do not omit tilting the light behind an inch or two occaſionally, to paſs off the ſteam, and cover it on nights with a mat.

Thus the plants will come up in three or four days, obſerving now to admit freſh air daily, by raiſing the lights an inch or two behind, alſo occaſionally on nights, according to the rules hereafter directed, and cover every night with mats: when their cotyledons, or ſeed-leaves, are fully out of the earth, and begin to expand about half an inch in breadth, it is proper to prick them in pots (forty-eights) previouſly filled with rich earth within an inch of their rims, and placed in the frame a day before to warm, either in the ſame bed, made ſubſtantial at firſt for that purpoſe, otherwiſe in a new hot-bed, as you ſhall judge neceſſary, prepared a week before, and earthed, or covered with old tan ſix inches deep, for the reception of the pots: in either of theſe beds, when the earth of the pots is warm, proceed to prick the plants therein, raiſing them carefully out of the ſeed-bed, &c. with the fibres of their roots entire; then forming a hollow in the middle of the earth in the pots, place three or four plants horizontally at equal diſtances in each pot, covering over their ſhanks almoſt to their ſeed-leaves, ſhaking the pot gently to ſettle the earth cloſe; if the earth is dry give a very light watering with ſuch that has ſtood a few hours in the bed in bottles, to take off the chill; then directly plunge the pots to their rims in the earth of the bed, being careful that every part of the dung within the frame is covered with earth, &c. to reſtrain the ſteam from riſing immediately from the dung upon the plants; for the rank dung ſteam, when not meliorated by firſt paſſing through the earth, would prove their deſtruction.

In two or three days, at moſt, they will have taken freſh root, and begin to advance in growth, though that is often effected by theſe plants in leſs than four and twenty hours, particularly when pricked out at the above age; nor will they then require ſhading from the ſun till rooted, as is often the caſe with larger plants.

The plants being thus potted out, continue every day to tilt the lights, to paſs off the ſteam, and to admit a moderate portion of freſh air, and every night cover the glaſſes with a mat or two; give alſo occaſional light waterings, and as the plants riſe in height, mould up their ſhanks by degrees; likewiſe ſupport a due degree of heat in the bed, and in about a month the plants will be arrived at a proper ſize for ridging out.

As in the early culture of Cucumbers, the plants being tender, are liable to ſuffer by many accidents; it is therefore eligible to continue ſowing a little ſeed in the ſame bed every week, and prick ſome in pots, as before directed, that, if the preceding plants ſhould fail, theſe may ſtand, and will be a ready ſubſtitute; or, if the whole ſhould ſtand, theſe will do for latter crops, and you will have ſome to oblige a friend.

But as to the particular culture of theſe plants, after being potted in this their nurſery hot-bed, the following are the principal directions.

During the violent heat and ſteam of the bed, care is neceſſary to tilt the upper end of the lights, not only every day, but alſo occaſionally on nights, raiſing them an inch or two, or a little more or leſs, in proportion to the temperature of the bed and weather, both that the ſteam may freely evaporate, as well as for the admiſſion of freſh air, to ſtrengthen the plants, which would otherwiſe

draw up weak and yellow-coloured; but tilt the glaſſes, however, leſs in proportion on nights than the day, obſerving, in all cold piercing weather, to ſcreen the opening or tilted part of the lights occaſionally, by hanging a mat looſely from the top of the glaſſes, which will break the keen edge of the air and winds from ruſhing immediately upon the tender plants; likewiſe obſerve, that if the firſt great heat is ſo violent as to endanger burning the earth in the pots, the roots, or fibres of the plants, which you ought to examine daily; the remedy is, to raiſe up the pots a few inches, or as high from the dung as ſhall appear expedient for the preſervation of the plants; and when the vehemence of the heat ſubſides, they may be plunged again to their rims, obſerving alſo, when the heat is moderate, to raiſe the glaſs for the admiſſion of air, &c. only occaſionally in the day time, from about nine or ten in the morning in winter and early ſpring months, till two, three, or four in the evening, according to the heat of the bed, and as the weather is more or leſs mild and ſunny, always ſhutting down the glaſſes cloſe before ſun-ſet; cover the lights with mats every evening about four or five o'clock, or a little ſooner or later, according to the earlineſs, or advanced period of the ſeaſon and temperature of your bed, &c. uncover each morning about eight, or a little ſooner or later, according to the above rules, obſerving, that during the firſt greateſt heat of the bed, a ſingle mat thick is ſufficient covering; but as the heat decreaſes, augment it to two or three, but never let the ends of the mats hang down conſiderably over the ſides of the frame and bed, which would draw up a violent ſteam, and promote burning, and, at any rate, would ſtifle the plants, draw them up weak, and occaſion them to aſſume a yellow hue.

Water in moderate ſprinklings may be neceſſary once in three, four, five, or ſix days, as you ſhall ſee occaſion, by the mould drying in the pots, and according to the heat of the bed, and as the weather is more or leſs ſunny; obſerving, that ſunny days are to be preferred for the application of this element, and during the winter and early ſpring months, from about eleven to one or two o'clock is the proper time of day to perform the work; the water for which purpoſe ſhould be ſoft, i. e. either pond, river, or rain-water, and ſhould either be previouſly placed in bottles within the frame of the hot-bed a few hours, juſt to take the chill off, or prepared to a proper temperature, by warming a little over a fire to mix with the reſt, but by no means let it be warmer than juſt to take off the chill.

According as the ſhanks of the young plants riſe in height, add a ſmall portion of fine dry earth round them, repeating it occaſionally till the vacant ſpace in the top of the pot is filled, being careful to have ſome fine rich earth in the frame to warm for this uſe, adding it by degrees, and the plants will emit roots all the way along their ſhanks, as far as they are thus landed up, which will prove of no inconſiderable advantage to their growth.

In regard to the heat of the bed, it muſt all along be preſerved in a due temperature by proper linings round its ſides. But, in the firſt place, that in a week after the bed is made, when the vehement heat abates, it is proper to lay ſome dry ſtraw, waſte hay, or dry fern, around the ſides, near a foot wide, and as high as the bed, and a little way up the frame, which will prevent driving wet, and piercing cold winds from penetrating, to chill and occaſion a ſudden decay of its heat.

But when the heat begins naturally to decline, which in a ſmall bed often happens in about a fortnight, or three weeks, after it is made, then the ſtraw, &c. muſt be removed from the back and front of the bed, ſubſtituting in its ſtead a lining of well-prepared hot dung, working it about eighteen inches wide at bottom, ſloping it gradually upward, and raiſe it three or four inches higher than the dung of the bed, to allow for ſettling, covering the top with two inches depth of earth cloſe up to the ſides of the frame, to keep down the ſteam, which might enter the frame, when the glaſs is opened to give air, and injure the plants; for all rank ſteam, coming directly from the dung upon theſe plants, will ſcald and deſtroy all the leaves it encounters in its direction: this dung lining will revive the declining heat of the bed, and continue your plants in a healthful growing ſtate. In ten or twelve days after, you may line the other ſides of the bed, if it ſhall ſeem neceſſary, otherwiſe defer it longer; and if the ſeaſon ſhould prove very wet or ſnowy, lay ſome dry litter around the frame, upon the top of the lining, to ſhoot off the water.

In the courſe of lining the bed, have a watchful eye againſt burning or ſteaming your plants, as a freſh dung lining often promotes a new violent heat and ſteam; you muſt therefore obſerve the precautions above hinted,

hinted, of raiſing up the pots of plants, if neceſſary, and tilting the light in proportion.

As the plants, when firſt potted out, conſiſted only of the two ſeed-leaves, or cotyledons, they, in a week after, will begin to puſh from their centre the firſt proper or rough leaf, and in a few days after that, the ſecond rough leaf will advance, encloſing in its boſom other younger leaves, and the end of the firſt advancing ſhoot or runner, which in a few days ſhould be ſtopped, to ſtrengthen the plants, and promote lateral fruitful ſhoots.

The operation of ſtopping ſhould be performed when the ſecond of the rough leaves has expanded the breadth of a ſhilling; it is a ſort of pruning performed by taking off the end of the firſt runner, ariſing, as above hinted, in the boſom of the ſecond leaf; is requiſite both to ſtrengthen the plants, and to promote their putting forth lateral ſhoots or runners, to fill the bed with proper-bearing vine; for the lateral ſhoots are the only bearers to be depended on: let therefore the end of the advancing runner be carefully taken off almoſt cloſe to the baſe of the ſecond leaf, but never ſuffer more than the third rough leaf to advance before this is done, and, if performed when the end of the ſhoot is not bigger than a large pin's head, the better; and by this early ſtopping the plants at the firſt or ſecond joint, they will grow robuſt, and ſoon prepare to ſend forth fruitful runners, ſhewing fruit probably at the firſt or ſecond joint; but if the firſt ſhoot was not ſtopped as above, it would ſometimes advance two or three feet in length, without either ſending forth ſide runners, or ſhewing fruit; for the fruit are always principally to be expected from the lateral runners.

*Ridging them out in Frames.*

When the plants have two or three rough leaves near three inches broad, and the operation of ſtopping at the firſt joint has been performed, as above directed, they will be in excellent order for ridging out, as they will then be juſt preparing to emit runners.

Provide therefore, in due time, dung for making the fruiting hot-bed, the quantity proportioned to the number of lights which you intend to work, allowing, if early, a cart load, or twelve or fifteen barrows full to each light; on this occaſion your care is requiſite to have it of proper quality, as before obſerved, by mixing it well together in an heap, ſee HOT-BEDS; but in your proceedings you muſt with forecaſt make the neceſſary allowance for the time of the dung's working, and the bed coming to a proper heat, that the plants, when ready, may not wait for the bed; this premiſed, and the dung being prepared, ſtake out the bed frontways to the ſouth, the width and length in proportion to the dimenſions of the frames, and number of lights to be employed, making allowance for the bed to be ſix inches wider than the frames; and, when more than one range of hot-beds are intended, one before another, allow a ſpace of five or ſix feet between bed and bed, for lining, &c. the dimenſions being thus ſtaked out, wheel in the dung, and proceed to make the bed, firſt ſhaking ſome of the moſt ſtrawey dung along the bottom, and then mixing long and ſhort regularly together, carry on the bed evenly, building the ſides ſtraight and upright, the middle perfectly full, and form every part equally cloſe and firm, by beating it evenly down with the fork from time to time as you advance, not treading it, unleſs the dung is very long and ſtrawey indeed, raiſing the whole three feet ſix inches high, at leaſt, if early in the year; otherwiſe a yard in height will be ſufficient, eſpecially if any conſiderable range for two, three, or more frames; but if for a three-light frame only, and made any time before April, make it the full height of three feet and half, before mentioned, as it will ſettle near a foot in leſs than a fortnight; obſerving, that of whatever ſubſtance the bed, always raiſe it rather higheſt behind, finiſhing the work by ſhovelling up all the ſhort dung remaining round the bed at laſt, and lay it at top in a ridge along the middle, which, after the bed ſettles, may be levelled as you ſee occaſion; for it will be a week, ten days, or a fortnight, according to its ſubſtance, before its heat is moderate enough for the plants.

But as ſoon as the bed is made, I adviſe to ſet on the frame and glaſſes, being neceſſary both to defend the bed from great rains, and to forward it ſooner to a proper degree of heat for the reception of the plants; obſerving, when the heat riſes, to prop up the lights, to give free vent to the ſteam, at the ſame time thruſting a long ſtick or two into the bed, that by pulling them out daily, and feeling the lower part, you can readily judge of the working of the bed, from its firſt heat, till it gradually encreaſes to its greateſt height of vehemence, and thence till it becomes of a temperate degree, which, in a middling bed,

is ſometimes effected in a week or ten days, but when of a more conſiderable range, for two, three, or more frames, it is often near a fortnight, and ſometimes more, before the heat becomes temperate enough to receive the mould and plants, which muſt not be truſted in the bed while the heat is violent, i. e. ſo hot that you cannot readily bear your finger in it any conſiderable time; for it would both burn the earth and roots of the plants, and, if it even only burns the mould, the plants can never thrive; do not, however, ſuffer the heat to become too moderate before you put in the plants, for it is neceſſary there be a briſk heat to ſet them a-going at firſt.

When the bed, therefore, is become of due temperature, prepare to mould it, previouſly obſerving, that, as the bed generally ſettles unequally, it is proper, firſt to take off the frames, and level all inequalities, and ſmooth the ſurface with the back of the ſpade, and directly ſet on the frame for good; then, the better to ſecure the earth, immediately under each hill of plants, from burning, you may, where convenient, lay a ſtratum of pliable cow-dung, not too wet, on the ſurface of the bed, juſt under the centre of each light, about eighteen inches, or two feet diameter, and an inch and half thick, plaiſtering it cloſe and ſmooth; this done, proceed to mould or earth the bed. Let the earth be rich, light, and moderately dry, as formerly mentioned, then, under the centre of each light, upon the ſtratum of cow-dung, lay about three pecks, or near a buſhel of this earth, forming each parcel into a ſort of conical hillock ten or twelve inches high, at the ſame time covering the reſt of the bed, between and round the hillocks, with the ſame ſort of earth three inches thick; on each of theſe hillocks of earth you are to ſet one pot of plants, as hereafter directed, and the reſt of the bed is to be afterwards moulded up by degrees to the height of the ſummit of each hillock.

The reaſon for forming the earth in hillocks is, that if the bed ſhould diſcover any tendency to burning after the plants are ridged out, the vehemence of the heat and ſteam will more readily paſs off between the little hills, than if the bed was at once earthed all over to its proper depth; beſides, by forming it in hills, if the earth ſhould be in danger of burning, by removing ſome around near the bottom, to reduce the ſubſtance of the heaps, the ſteam will more eaſily find vent, and if the earth ſhould unavoidably burn at the baſe of the hillocks, the burnt earth can be more eaſily removed, with leſs danger of diſturbing the plants, and, at the ſame time, be replaced, with freſh mould; likewiſe, by this practice, you may venture to ridge out your plants two or three days, and in ſome beds, a week ſooner than if the bed was to be at once fully earthed; and likewiſe, by adding freſh earth by degrees round the hills, it greatly encourages the fibres of the plants.

But to proceed to planting—The bed being earthed, as above directed, immediately put on the glaſſes cloſe, and by next day the bed will have imparted a proper warmth to the mould for the reception of the plants; having directed them, in the nurſery-bed, to be potted, three or four plants in each pot, allowing one pot of plants to each of the above hillocks of earth; but previous to tranſplanting, let each pot of plants be watered a few hours before, that the earth may adhere firmly in a ball about their roots; then, to turn them out of the pots, ſpread your hand on the ſurface of the mould, paſſing the ſhanks of the plants between your fingers, and turning the pot upſide down, ſtrike the edge gently on the frame, the plants will readily come out with the whole ball of earth entire; then, making a wide hole in the middle of the hill of earth, place the plants, with the entire ball about their roots, therein, drawing the earth cloſe round, and about an inch over the top of the ball; and if the earth is moderately dry, give a little water that has the chill taken off, and, as ſoon as they are planted, ſhut down the glaſſes cloſe, to draw up the heat, obſerving, if the ſun ſhould ſhine out, and it occaſions the leaves of the plants to flag, indulge them with occaſional ſhade; but, by care in tranſplanting them from the pots with the entire ball about their roots, they will ſcarce feel their removal, ſo as to ſhrink their leaves at the approach of the ſun; if they, however, flag conſiderably, ſhade them with a thin mat, from ten to two o'clock, the firſt three or four days, or till they take root ſo firmly as to ſtand the ſun without flagging.

The plants being now ridged out, great attention is neceſſary to allow them a daily and proportionable ſhare of freſh air, by tilting up the lights occaſionally; likewiſe to cover the glaſſes every night with mats; particular care is alſo requiſite, at firſt, to guard againſt their

their being annoyed by too much heat or ſteam, and that they do not ſuffer by cold or want of heat; occaſional waterings are alſo neceſſary in moderation; the moulding up the bed round the hillocks by degrees muſt alſo be duly attended to, ſtopping the plants once more, to procure a farther ſupply of fruitful runners, and, as the runners advance in length, train them at regular diſtances, together with the care of ſetting the early fruit; and the due temperature of heat of the bed to be preſerved by proper linings, &c.

As to the article air; in this particular your care is to conſider not only the ſtate of the bed, but likewiſe the temperature of the weather, early or advanced period of the ſeaſon, or if the ſun ſhines, or the air be cloudy, wet, or foggy; and to proportion the admiſſion of air accordingly; obſerving, that wet or foggy air, even, though mild, is more unfavourable to the growth of theſe plants than froſt, provided it is accompanied with ſunſhine, and that you have proper heat in the bed, to maintain a warmth about the roots of the plants, and to warm the internal air of the frame almoſt equal to that of a hot-houſe; and, indeed, great care is neceſſary to preſerve your bed always nearly to that temperature; for the plants are rather of a more tender quality than the pine: let air, however, be admitted daily at all opportunities, when the wind is ſtill, by tilting the lights behind, from half an inch to two or three high, as your diſcretion ſhall direct, according to the rules laid down for the nurſery-bed, making an allowance, as the ſeaſon and warm weather advances, in the time of day, of beginning to open and ſhut down the lights; and be ſtill perſuaded to occaſionally hang a mat over the tilted part of the lights in ſharp weather, that the plants may at the ſame time receive a moderate ſhare of air, and the ſteam paſs off without injury; for if the cold air is too freely admitted at an early ſeaſon, it will frequently deſtroy, or greatly injure the plants; and if the lights are kept too cloſe, ſo as to confine and ſtagnate the ſteam, the danger will be equal, the plants will imbibe an infected air, and ſoon ſhew their ſickneſs by the yellowneſs of their aſpect: when there is a conſiderable heat and ſteam in the bed, air ſhould always be admitted the moſt freely, even ſometimes on nights in a ſmall degree, as obſerved of the nurſery-bed; and in ſunny weather air is to be admitted more freely than in wet, foggy, or cloudy days: in the whole obſerve, that as there are often ſeveral changes of weather in a winter's day, and even early in ſpring, your attention muſt be given accordingly, to admit either more or leſs air, or none at all, as you ſhall judge neceſſary for the benefit of the plants, being careful, for the general part, after the great ſteam has ſubſided, to ſhut down the lights always before ſun-ſet; or, if the weather changes very ſharp, foggy, or cold driving wet, let them be ſhut down an hour or two ſooner: thus continue your attention in reſpect to the admiſſion of air, obſerving, with this care, the lights are to be continued conſtantly over the plants until almoſt Midſummer, not omitting, as the warm weather advances, to tilt them high enough in proportion; and as the heat of each day encreaſes, from morning to noon, tilt them gradually higher in proportion to the power of the ſun.

Covering the glaſſes on nights with garden-mats, &c. muſt be conſtantly practiſed every evening about ſun-ſet, or a little ſooner in very cold cloudy weather, uncovering again in the morning about ſun-riſing, or a little before or after, according to the temperature or heat of the bed, or as the weather is more or leſs favourable; and in fine, warm, ſunny mornings, always uncover as ſoon as the ſun ſhines freely on the frames, for it is very beneficial to the growth and proſperity of the plants, to enjoy as much day-light as poſſible. As to the mode of covering, uſe only a ſingle mat thick at firſt, augmenting it to two or three occaſionally, and never ſuffer the mats to hang down much over the ſides of the frame, which would draw up a great ſteam, and ſtifle the plants too much, as obſerved of the nurſery-bed: by theſe rules the covering muſt be continued every night until June.

The ſtate of heat of the bed ſhould daily be examined the firſt week or fortnight after the plants are ridged out, leſt it ſhould encreaſe again ſo violent as to endanger burning the earth at the bottom of the hills, as well as the roots of the plants; by examining the bottom of the hills, the burning, if any, is generally diſcoverable, by its having a whitiſh mouldy appearance; this muſt be taken away with great care, before it encreaſes upward to reach the roots of the plants, and, if poſſible, without diſturbing them in growth, immediately adding in its ſtead a due quantity of freſh earth, keeping the bottom of the hillocks in as narrow a compaſs as poſſible, till the danger of burning is paſt, which will be in a few

few days; but if the heat ſtill threatens danger to the plants by its violence, make wide holes in the ſides of the bed, by thruſting large ſtakes into the dung in different parts, at which holes the burning heat will evaporate in ſteam, without aſcending to the top, cloſing the holes again in two or three days with dung.

The moulding or earthing the bed between the hillocks ſhould be began as ſoon as the heat becomes moderate; therefore, in a week, fortnight, or three weeks, as you ſhall judge the danger from burning is over, lay in ſome freſh earth, to be added gradually around each hill of plants, for their fibres will now advance conſiderably, and ſtriking into the freſh mould, it will greatly encourage them; but obſerving this precaution, that the earth for this purpoſe ſhould be previouſly laid a day or two, towards the ſides and ends of the bed within the frame, to acquire a due warmth before it is applied round the hills, which otherwiſe would chill the fibres; and let it be underſtood, that this mould is not to be laid all on at once, but at different times, till the whole is earthed to the height of the tops of the hills; ſo that the whole bed will be now eight or ten inches depth in earth.

With regard to preſerving the due temperature of heat in the bed, let it be obſerved, that, as ſoon as the firſt great heat and ſteam ſubſides, it will be of utility to lay ſome dry long litter, or ſtraw, waſte hay, or dry fern, around the bed and frame, eſpecially in early work; it will defend it from the inclemencies of weather, by preventing violent or driving rains, ſnow, or ſharp cold, penetrating winds, or ſevere froſt, from inſinuating into the interior part of the bed; and by which precautions the heat will be continued in fine order till it begins naturally to decreaſe, when a ſubſtantial lining of hot dung muſt be added to one or two ſides of the bed, as ordered for the nurſery bed, and as hereafter directed in its proper place.

In reſpect to watering, a moderate ſprinkling will be neceſſary about once a week or ten days, though, in ſunny warm weather, it is probable twice in that time will be requiſite, or oftener, as the warm weather advances; chuſing, in winter and ſpring, always a warm ſunny day, any time from ten to two o'clock for this operation; but, as the warm ſeaſon advances, be more early in the day, and encreaſe the quantity of water, being careful, in cold weather, to have the chill taken off, as hath been already directed of the nurſery-bed; obſerving, that early in the year it is not proper to water too freely all over the plants and young fruit, eſpecially when there is but little ſun; but rather give the water moſtly between the vine, out of the ſpout of a ſmall watering-pot, placing a piece of tyle, or oyſter-ſhell, to water on, to prevent the mould from being waſhed from the fibres, ſo removing it to different parts of the bed; but, in fine weather, water ſhould alſo be given now and then moderately all over the leaves of the plants, which will prove a conſiderable refreſhment to them. At each time of watering, in either method, always ſhut down the lights for half an hour, or an hour, particularly in the winter and ſpring waterings. When you at any time water all over the plants, obſerve, if the ſun ſhould then, or ſoon after, ſhine out with much force, give a ſlight ſhade of a mat over the glaſſes an hour or two, leſt, by its power through the lights, it ſcorch the leaves where the drops of water adhere to their ſurfaces; but when the ſeaſon is ſo conſiderably advanced, that the ſun is powerful, the general waterings ſhould be performed in a morning before nine, or in an afternoon about three or four o'clock, when the heat of the day is paſt.

Having, when the plants were in the nurſery-bed, directed their firſt pruning, called ſtopping, obſerving, if that operation was then omitted, it muſt now be done the firſt opportunity, according to the former directions.

The plants being thus ſtopped, they, in ten days or a fortnight, will each ſend forth two or three lateral ſhoots or runners, obſerving, that when theſe have advanced two or three joints in length, if they do not ſhew fruit, a ſecond pruning ſhould take place, by ſtopping each ſuch runner at the third joint; this will promote their putting forth each about three fruitful runners, i. e. ſuch that will probably ſhew fruit at almoſt every joint; for it is from the lateral or ſide runners, acquired by the firſt or ſecond ſtopping, we are principally to expect the fruit, as you will ſee by obſervation, though, in good kinds, it frequently happens that the runners produced, in conſequence of the firſt ſtopping, ſhew fruit at the firſt or ſecond joint, which is a particular advantage in early crops. According as the runners advance, conduct them along in regular directions, at equal diſtances from each other, fixing them in their proper poſition, by gently pegging

pegging them down to the earth with ſmall hooked pegs, which you will repeat occaſionally during their advancing growth, and they will ſoon ſpread all over the bed.

In three or four weeks after ridging out, the plants may be expected to ſhow fruit, though ſometimes that is effected in a week or leſs, and perhaps at the firſt or ſecond joint, when the plants are not more than five or ſix weeks old; and I have had fruit ſhew at the firſt joint, a day or two after ridging out, in the beginning of February, as big as a ſmall barley-corn, and cut the ſame fruit for the table before the month was out; for the great article at an early ſeaſon is, to ſecure and forward the firſt-ſhewn fruit to maturity, which, without a peculiar mode of culture, will turn yellow, and drop off in their infant ſtate.

When the plants therefore ſhew fruit, particular attention is neceſſary, for one thing, to the keeping up a moderately briſk and regular heat in the bed, by proper linings, &c. for a great deal depends upon this, that the plants may be continued in a ſtate of free growth, whereby the infant fruit will advance freely, and flower ſtrong; and the next thing particularly to be obſerved, is, always to perform the office of ſetting or impregnating the young fruit, according as they come into full bloſſom, by injecting the farina of the male flowers, as hereafter directed, for the male flowers moſt commonly accompany the female or fruit bloſſoms; ſo that by practiſing this, and if a good heat is preſerved in the beds, with the due admiſſion of freſh air and moderate waterings, the fruit will ſet and ſwell freely, ſo as to acquire a due ſize for the table, probably in a week or ten days, or a fortnight at moſt, after performing the impregnation; and that, if you began about Chriſtmas, or ſoon after, the firſt fruit, with due management, will be ready early in March, and from the ſame bed a regular ſucceſſion may be obtained till Midſummer, or longer.

In reſpect to lining the bed; this may probably be requiſite in three weeks or a month, or little more or leſs, after it is made, but this is according to the ſubſtance of the bed; examine, therefore, carefully, when the heat begins conſiderably to abate, and, on diſcovery thereof, loſe no time, but prepare to line the back-part as ſoon as poſſible, for the ſucceſs of early work depends on keeping up a conſtant regular heat; having therefore hot dung in due readineſs, by previouſly working it in a heap, as formerly directed; then removing the litter from the back of the bed, work up the dung lining a foot and half wide, and as high as the dung of the bed, or rather half a foot higher, to allow for ſettling, for the lining ought to be ſubſtantial, otherwiſe it will not have the deſired effect; obſerving, if the heat of the bed is conſiderably declined, you may alſo line the front, otherwiſe it will be better to defer it a week longer; and, in ten or twelve days after that, you may ſhake up the firſt lining, adding thereto a little freſh dung, which will greatly revive its heat, obſerving alſo the ſame of the front lining; and by thus alternately making, and renewing the lining, you may preſerve a fine growing heat in the bed till June, when, by the nature of the ſeaſon, the plants will ſucceed without farther aid of artificial heat, though it is neceſſary to allow them the ſhelter of the frames and glaſſes until the middle or end of that month.

At each time of lining, do not omit laying two or three inches of earth at top, to reſtrain the rank ſteam of the dung, which would riſe and enter the frame at the ſmalleſt hole or crevice, or at the opening of the lights deſigned for the admiſſion of air.

Obſerve, likewiſe, that as a freſh lining always cauſes a very copious ſteam, and ſometimes a ſtrong heat, due attention muſt be given to tilt the glaſſes in proportion.

And when you renew the lining for the laſt time in the end of April, or in May, lay ſix or eight inches depth of earth on the top, at the ſame time raiſing the frame at bottom, that the earth of the lining and bed may join, ſo as the fibres may ſhoot into the new earth; it will greatly encourage the roots, add freſh vigour to the plants, and will ſufficiently recompence you for the trouble.

Where there is more than one range of framing, if the whole ſpace between was filled up at the above time with hot dung, it would be an additional advantage to the crop.

With regard to the work of impregnation, or ſetting the fruit above-mentioned, it is a moſt neceſſary operation of art incumbent on the gardener in the early culture of theſe plants, to be done according as the flowers, both male and female, come into full bloom, and is performed by injecting the farina of the male into the ſtigmata of the female bloſſom, which is as neceſſary to the generation of plants, as the ſeed of animals is to their reſpective ſpecies. In hermaphrodite plants the male and female organs are included

cluded all within the ſame flower, and conſequently the impregnation is readily effected by nature; but all the ſpecies of *Cucumis* being monoecious plants, male and female flowers diſtinct, both, however, on the ſame plant, the male bloſſoms being furniſhed with the ſtamina, having their antheræ loaded with a golden powder or farina, deſigned by nature to impregnate the females, ſo that the conveyance of this male powder to the female flower, either by nature or by art, is abſolutely neceſſary, as, without its aid, the young fruit will conſtantly turn yellow, and drop ſoon after they have flowered: in ſummer, when the plants are fully expoſed, the gentle breezes of wind, as alſo the bees roving from flower to flower, having the farina adhering to their legs, and ſome other accidents, are ſuppoſed to convey a ſufficient portion of the farina for fecundating the females; but in winter and early ſpring, when no wind nor bees, &c. have free acceſs into the frames, ſhews the neceſſity of performing the impregnation by art to theſe plants in particular, by carrying the male to the female bloſſoms; and the following is the method.

On the day the flowers of both ſexes fully open, or the day after at fartheſt, is the proper period for performing the operation; the male bloſſoms are with facility diſtinguiſhed from the females by the rules already obſerved; therefore, at the period of growth juſt mentioned, gather ſome of the beſt male bloſſoms, and apply their antheræ to the ſtigma of the females; ſome direct whelming them down over the female flower, ſo ſtriking them with the fore finger, to cauſe them to diſcharge the farina; but the moſt certain method is, that having gathered the male bloſſom with the ſhank or ſtalk thereto, pull off the petal or corolla carefully from about the ſtamina and antheræ; then taking the ſhank of the flower betwixt your finger and thumb, apply the antheræ, or top of the ſtamina, to the centre of the three ſtigmas of the female bloſſom, and twirl it about two or three times, that it may diſcharge or inject a due portion of the *pollen* or farina, into the ſaid ſtigmata or female organs, and then caſt it away, uſing a freſh male bloſſom for each impregnation, unleſs the males are ſcarce, as ſometimes is the caſe early in the year, when one male with care may be made to impregnate two or three females, as it alſo ſometimes happens at an early ſeaſon, that a fruit bloſſom opens, and no males forward enough on the plants; in this mortifying circumſtance you muſt have recourſe to your neighbours, ſome of whoſe plants may probably be on the contrary extreme Some, in performing the impregnation, inſinuate the male organs in betwixt the ſtigmata of the females, and ſo leave it till it naturally drops out; and ſometimes they twiſt the top of the female corolla together to keep the other part in; but all this is unneceſſary: practiſe, as before directed, and caſt the male part away as ſoon as you have performed the operation, which, if well executed, and there is a good heat in the bed, the young fruit will make amazing progreſs in a few days, advancing with the flower at its extremity; and when from about three to five or ſix inches in length, is fit to cut for the table.

Always make it a rule, during the early ſeaſon, to ſet every promiſing fruit, according as they come into bloſſom; and the critical moment is, the middle of the firſt day the bloſſom opens, or the ſecond, at moſt; being careful never to water too freely over the newly-ſet fruit, eſpecially at an early ſeaſon.

Some, to encreaſe the growth of the newly-ſet fruit, ſtop the runner, on which it is ſituated, at the firſt or ſecond joint above; it may be practiſed to ſome of the earlieſt; but too frequent ſtopping occaſions a great number of weak ſhoots, and a confuſion of vine.

The importance of the above operation is ſo eſſential in the early culture of Cucumbers, that it ſhould never be omitted, as by the practice you may always make ſure of the firſt, and every fruit that ſhews, whereas, without this care, if the culture of the plants is ever ſo well conducted, no fruit will ſet till late, as by many is experienced, except by chance ſome ſtraggling bee may have crept into the frame; ſo by the fertilizing duſt ſticking to their legs, accidentally perform the operation. The doctrine, however, of impregnation, is by ſome diſputed, in reſpect to its neceſſity and efficacy; and what is ſurpriſing, the Rev. Mr. Hanbury, in his Body of Gardening, gives hints of its inutility, as unneceſſary and of no effect, advancing, that good crops of early fruit may be expected without its aſſiſtance; but this only ſhews their total want of practical experience in this very important proceſs, as well as in that of early Cucumber framing; for almoſt every eminent gardener has proved its great uſe, and was retained as a grand and uſeful ſecret, that many young gardeners, to know it, have given a conſiderable gratuity.

There

There are, however, no other plant of our gardens that requires the gardener's aſſiſtance in the above work of generation, beſides Cucumbers and Melons, and theſe only in their early culture, under frames, or in hot-houſes, where the free air, and other means, by which the fecundating function might be naturally performed, is not obtained.

The male bloſſoms, ſo eſſentially neceſſary in the above culture, are by the ignorant termed falſe bloſſoms, and are often pulled off; but this ſhould never be done at any time of year, either in hot-beds, or in the full ground, except, indeed, where they grow in great cluſters, in which caſe they may be thinned off, leaving ſufficient for ſetting the fruit; and, likewiſe, as the bloſſom in general fades, it ſhould always be cleared away, eſpecially in early frame culture.

As theſe plants generally extend their vine conſiderably all over the ſurface of the bed, quite to the ſides of the frame, frequently ſending forth runners from all their joints as they advance, inſomuch as ſometimes to occaſion a great confuſion of vine; in which caſe, if numbers of weak, long-jointed, fruitleſs ſhoots, are produced, it is proper to thin them out occaſionally, cutting them off cloſe; and where the runners in general are conſiderably crouded, thin out alſo the weakeſt, moſt irregular, and the fruitleſs ſtragglers, ſo training the main vine, and principal bearing ſide-runners, in a moderately thin and regular manner; for when the bed is greatly crouded with vine, it, by excluding the neceſſary influence of the benefit of the ſun and air, occaſions numbers of the young fruit to drop off in their minority; obſerving, however, that the regulation of the plants, as above, ſhould, if poſſible, be begun before the vines are much entangled with each other: clear off alſo all worn-out or decayed runners; likewiſe all decayed leaves, and thin the large cluſters of male bloſſom, and pick them off in general when they begin to decay.

When the ſeaſon is advanced, that the ſun ſhines with great vehemence through the glaſſes, it is proper to give occaſional ſhade of ſingle mats, an hour or two, in the middle of ſuch ſcorching ſunny days; otherwiſe, the violence of the ſun through the glaſſes might ſcorch the leaves of the plants.

As the ſummer advances, and the days grow long, the ſun powerful, and the air mild, afford your plants a large portion of air, by tilting the lights a hand's breath or more high, in the heat of the day, which ſhould be done occaſionally in front, in very hot calm days in May and June; and in very ſcorching weather, the occaſional ſhade of a ſingle mat, or a little looſe hay ſtrewed over the glaſſes, during the fierce ſun, from eleven to two o'clock, is neceſſary, leſt the violent heat through the glaſſes ſcorch the leaves and fibres of the roots; at this time do not let them want water, once, twice, or three or four times a week, according to the heat of the weather: obſerve, likewiſe, at this time, if the leaves of the plants are grown ſo large and high as to preſs againſt the lights, it is adviſeable to raiſe the frame at bottom about three or four inches, by placing a brick, &c. under each corner, making good all irregularities of the earth of the bed occaſioned by this work, filling up alſo, at the ſame time, with earth, between the mould of the bed, and that at top of the lining, for the fibres to ſtrike into, as formerly hinted; and if the leaves of the plants are very large and crouded, let ſome be cut out, ſo as to admit the air freely: likewiſe, when the ſummer is advanced to the middle of June, if the weather is warm and ſettled, the frame may be raiſed ſo high at bottom, as to admit of the end of the plants being trained from under, upon the top of the lining, being careful to cover them on nights with mats the firſt week after training them out, till hardened to the open air; and towards the end of that month, or beginning of July, may gradually expoſe the whole to the full air to take their chance for the remainder of the ſummer, though, if you would continue them in bearing as long as poſſible, it is proper to continue to defend them on nights, and all exceſſive wet weather, with the lights.

Thus far is principally the whole culture of Cucumbers in frames, according to real practice, from the ſowing of the ſeed till the maturity of the fruit for eating; and, as the early culture is to many the moſt difficult taſk in gardening, and often attended with bad ſucceſs, by not being generally underſtood, nor has been ſufficiently explained by former authors, we have enlarged the more on this head.

But before we quit this article of the frame-culture, we would juſt add, as a neceſſary hint, that, in your proceedings in early work, never depend entirely upon your firſt ſowing and planting, but continue ſowing a little ſeed occaſionally, both in the ſeed and nurſery

hot-bed, and in the fruiting bed, after ridging out, either in pots, or in the earth of the beds; ſo pricking ſome in pots, as directed before, and plunge them in the earth towards the back of the frame; and by having them of two or three different degrees of growth, they will be ready, in caſe the firſt plants ſhould not thrive, or that they are cut off by any accident, as ſteaming, burning, cold, &c. and ſome will alſo be ready for ſucceſſion crops in new hot-beds, for it is neceſſary to have at leaſt two different crops in frames, one ſucceeding the other; and, in either caſe, it is always good culture to keep up a ſufficient ſtock, if more than wanted the better, as you will have the pleaſure of aſſiſting a neighbour with a hole or two, for which there is always great requeſt in the ſpring ſeaſon.

The raiſing or planting Cucumbers in frames may be practiſed, occaſionally, any time from Chriſtmas, as before obſerved, until the middle of May; though after the middle of April the plants will ſucceed in hot-beds, under hand or bell-glaſſes, which is the common culture for the later ſummer crops, that come in to bearing in June and July, and for which crops you may ſave the expence of frames, except, however, you have ſpare frames and lights, when they will, even for theſe crops, be preferable to the hand-glaſſes.

The neceſſary quantity of framing to work for the ſupply of a family is; for the early crop, if for a ſmall family, a two, or a three-light frame, may be ſufficient for the fruiting-bed; but for a large family, three ſuch frames, at leaſt, will be requiſite for the firſt crop, and full as many for the ſucceeding one.

Early Cucumbers for market is a valuable article, eſpecially in London, as thoſe in March will often fetch thirty ſhillings a dozen from the retailers, who frequently ſell them again at double that price; and, in April, from ten to fifteen ſhillings is the common price per dozen; after which time they become plenty, and the price falls proportionably every week till Auguſt, when the natural ground crop comes in, and when a dozen ſometimes will ſcarce fetch a penny.

*Their Culture under Hand or Bell-Glaſſes.*

When intended to raiſe Cucumbers in hot-beds, under hand or bell-glaſſes, the ſeed ſhould be ſown about the middle or latter end of March, and the plants will be ready to ridge out about the middle or latter end of April, or firſt or ſecond week in May, which periods are as ſoon as theſe plants will ſucceed under theſe kinds of glaſſes, and in which they will arrive at full bearing in June and July.

The long green prickly is the moſt eligible Cucumber for this crop; ſome of the green and white Turkey kinds may alſo be ſown for variety, as alſo any of the other ſorts; but let the firſt mentioned be preferred for the main crop.

The merit of hand or bell-glaſſes in the culture of Cucumbers is, that, for a general ſummer crop, it ſaves the expence of frames and lights, as a crop of Cucumbers, to come in for uſe part of May, all June and July, may be obtained by planting, at the above-mentioned time, in hot-beds, under theſe glaſſes, without the aid of frames; ſo that perſons not accommodated with frames and lights, or do not chuſe the expence, or that they are all employed in the early Cucumber or Melon beds, which cannot poſſibly ſucceed without their protection, may, for the ſummer crop, as above hinted, have recourſe to the hand or bell-glaſſes, at the proper period, April and May, which is of much importance to thoſe who raiſe large quantities, and particularly to the market-gardeners, ſome of which, in the Neat-houſe gardens near Chelſea, in the neighbourhood of London, work 2000 holes in a ſeaſon, each hole covered with a hand or bell-glaſs; therefore theſe glaſſes, at the afore-mentioned time, being placed on moderate hot-beds, you may either ſow ſeed under them, or put in plants, but the latter is greatly preferable, having them previouſly raiſed in a nurſery hot-bed, hereafter directed, till in the rough leaf two or three inches broad, that, being ridged out, four plants under each glaſs, in the middle or latter end of April, or in May, they will fill the glaſſes with their vine, by the time the weather is warm enough, in the beginning of June, to admit of their being trained out from under them, for the vine muſt have ſcope to run, as they will not ſucceed if too much cramped within the compaſs of a hand or bell-glaſs; for which reaſon, it will not admit beginning to ridge out earlier than the middle of April, leſt the plants grow too large for the glaſſes, before the weather is warm enough to train them out; however, in default of other conveniences, you may ſow ſome ſeed in the end of March, or

or beginning of April, under hand-glaſſes, not however, where they are finally to remain, eſpecially if before the middle of the laſt-named month, but rather, if poſſible, in a ſort of nurſery hot-bed, made for one or more of theſe glaſſes, to raiſe the plants to the ſize before mentioned for ridging out at the proper time; but in default of plenty of hot dung, or plants, &c. may ſow the ſeed at once in a final hot-bed, under theſe glaſſes, eight or ten ſeeds in each, any time from about the middle of April to the middle or latter end of May, thinning the plants to four in each hole; and even by this practice of raiſing them, they will be only two or three weeks later, and will have fruit a month ſooner than ſuch that are raiſed from ſeed ſown in the natural ground the beginning of June, which rarely arrives to a bearing ſtate before Auguſt

But the moſt eligible method for raiſing plants for the hand or bell-glaſs crop is, in March aforeſaid, or very early in April, either to ſow the ſeed in the Cucumber or Melon hot-beds already at work under frames, or where there is no room, or there are no frames at work, make, about the middle, or toward the latter end of March, a hot-bed for a frame of one, two, or more lights, according to the quantity of plants required, obſerving nearly the ſame rules in making the bed and ſowing the ſeed, as directed in the frame culture: likewiſe prick the plants, when in the ſeed-leaf, either in pots, or at two or three inches diſtance in the earth of the bed; but, for the greater convenience of ridging-out the plants with balls of earth about their roots, it is more adviſeable to prick moſt of them in pots, four in each, as obſerved of raiſing them for the frames; obſerve alſo nearly the ſame rules for giving air, covering up on nights, giving occaſional waterings, keeping up the heat of the bed, and ſtopping the plants at the firſt joint, as there directed; and in about three, four, or five weeks, when the plants have rough leaves two or three inches or more broad, and beginning to ſhoot runners, they are of due ſize for ridging-out.

The moſt proper time for ridging out under theſe glaſſes is, from about the middle of April to the middle or latter end of May.

The hot-beds for this ridging out are to be of hot dung, prepared as exhibited in the framing; obſerving, that as the ſeaſon for this work is April and May, the beds need not be quite ſo ſubſtantial as is neceſſary at a more early ſeaſon, allowing, however, if in April, dung enough, if poſſible, to make the bed three feet ſix wide, and two feet and half high; though, if not made till May, two feet height in dung may be ſufficient, and, at either time, the length of courſe proportionable to the number of hand-glaſſes you deſign to work, allowing them to ſtand at three feet ſix inches diſtance, in one row along the top of each bed.

The ridges or beds are, according to the ſeaſon, to be made either entirely on level ground, or in a trench fifteen or eighteen inches deep; obſerving, if you would ridge out in April, that, as the beds will require lining in three weeks, to revive the heat, to carry on the plants till the arrival of warm ſettled weather in June, it is therefore proper to make them entirely above-ground, to admit of lining the whole of each ſide quite to the bottom; but if you do not ridge out till May, no linings will be required; and as the ground will then be warm, dry, and free from ſtanding water, it is proper to make the bed in a trench three feet wide, and near half that in depth; ſo that the bed being above half way in the ground, and the upper part to be covered on the ſides and top with the earth of the trench, the whole will aſſume the appearance of a ridge of earth, and, by being thus moulded, and all caſed over with earth, it will preſerve the heat the longer.

On conſideration, however, of ridging-out in April, conclude to make the ridge entirely on level ground; therefore ſtake it out three feet and half wide, and as long as convenient; then wheel in the dung, and work it up regularly ſtraight and upright on each ſide to about two feet and half high; but if four feet wide, and the above height, it will ſupport a more durable heat, and be of additional advantage, for the bed will ſettle a foot, and there are often many cold nights between this time and the end of May; obſerving, if more than one range is to be made, make them one before another, allowing a ſpace of three or four feet between, which may afterwards be occaſionally filled up with linings of hot dung and earth, which will prove very beneficial to the plants, finiſhing each bed, by ſhovelling up all the ſhort dung at laſt, and lay it at top.

Having thus made the ridge or ridges, they, in three or four days, will have ſettled, and the heat ariſen, then level any inequalities at top, making that part even and ſmooth, and proceed to mark out the diſtances for the

plants, and mould the places for their reception; for, as there are no frames to confine the heat and ſteam, you may always venture to ridge out within the week; the bed being levelled at top, mark out exactly along the middle thereof the places for the glaſſes and plants at three feet ſix inches diſtance; and, if the bed is very ſubſtantial, that, previous to moulding it, you may, if convenient, as a precaution, the more certainly to preſerve the earth from burning, plaiſter cow-dung an inch and half thick on the places where the plants are to ſtand, as hinted in the frame culture: having, however, marked the diſtances for the plants, lay on each of theſe places about a buſhel of rich earth in a hillock twelve inches high, and broad enough for a hand-glaſs; at the ſame time cover the other parts of the bed, between, and on every ſide the hillocks, two or three inches thick, with the ſame ſort of compoſt, and directly place a hand glaſs over each hill, ſhutting them down cloſe to draw the heat up ſoon, and cover them on nights with mats, and, when the earth is warm, put in the plants.

The next day, or day after, the earth will be ſufficiently warm for the reception of the plants; therefore, having previouſly watered the plants the day before, that the mould may cling in a ball about their roots; then removing the plants with a ball, and levelling the tops of the hillocks broad enough for each glaſs to ſtand, plant one pot of four plants in each hillock, as before directed for the frames, giving directly a little water, and put on the glaſſes, and, if they flag at the approach of ſun, afford them a moderate ſhade the firſt two or three days; but if they are carefully tranſplanted, with balls to their roots, they will not want much ſhading, and the leſs the better.

Being now ridged out, care muſt be taken to admit freſh air to the plants in the warmeſt time of every mild day, by tilting one ſide of the glaſſes, from about half an inch, to one, two, or more high, according to the heat of the bed and warmth of the weather; but ſhut down the glaſſes in due time towards evening, or ſooner, if the weather changes cold, keeping them cloſe on nights, and all very cold bad weather; and cover every night, all over the glaſſes and ridge, with mats, until June; alſo occaſionally in all hard rains.

Give alſo occaſional moderate waterings, according to the rules exhibited in the frame culture.

In a week after ridging-out, when the great heat of the bed will be abated, then begin to earth it by degrees all over, to the height of the hillocks, which will encourage and preſerve a due heat about the fibres of the plants; and if previouſly a wreath of large ſtraw-bands, made of any kind of long litter, is placed round the edge of the bed, juſt on the top of the dung, fixing them thereto ſix or eight inches high, with long ſharp-pointed ſticks thruſt into the bed, it will ſupport the ſides of the earth, ſo as to admit of moulding the bed to its full width, and will preſerve that part of the mould from being dried too faſt by the ſun and winds.

Towards the middle of May, or ſooner, if the heat of the ridges abate, and the nights continue cold, a lining of hot dung to both ſides of the bed will be of very great advantage; make this fifteen or eighteen inches wide, beating it firm on every part, raiſing it three inches higher than the dung of the bed, to allow for ſettling, and immediately earth it at top with rich earth to the thickneſs of that on the ridge; this lining will be moſt ſerviceable in a triple degree; the freſh dung will revive the heat of the bed, the earth at top affords additional ſcope for the fibres to ſtrike into, and the bed, being augmented in width, gives an opportunity of training the vines regularly to their full extent.

As the days encreaſe in heat, and the plants in growth, admit air accordingly, by tilting the warm ſide of the glaſſes in proportion, to harden the ends of the runners gradually, to be trained out from under the glaſſes, when the weather is become warm and ſettled.

In the latter end of May, or beginning of June, the plants will have filled the glaſſes with their runners; they muſt then be trained out, by elevating the glaſſes on props: this, however, muſt not be done too haſtily before the firſt or ſecond week in June, if poſſible, to retain the plants till that time under the glaſſes, for we have often very cold nights till the end of May, and ſometimes a week longer; therefore, in the firſt or ſecond week in June, according to the ſettled temperature of the weather, and advanced growth of the plants, prepare to raiſe the glaſſes on every ſide three or four inches high, on bricks, pieces of wood, or notched ſticks, and lead the runners out regularly at equal diſtances; faſten them down with hooked pegs, to ſecure them againſt the the power of winds, obſerving to continue the covering of mats every night, and all very rainy or bad weather, for the firſt fortnight after they are thus trained out from under the glaſſes; continue the

glaſſes

glaſſes alſo over them till July, or, if continued all ſummer, it will preſerve the head or main ſtem of the plants from injury of weather.

When the runners advance from under the glaſſes, if ſome dry reeds, clean wheaten ſtraw, or ſmall bruſhy or branchy ſticks, are ſpread on the ſurface of a few holes, for the vines to run upon, it will preſerve them clean, and the earth from drying too faſt; and the fruit will be better preſerved from ſpotting, which often is the caſe in wet ſummers, when they lie on the ground.

In hot dry weather, when the vines are advanced conſiderably, and in fruit, do not omit ſupplying them with water two or three times a week; though in July, when in full fruit, they, in very dry ſcorching weather, will need water every day, or even twice in a day, in the morning before eight, and in the evening after four o'clock, giving, at this time, a watering-pot full, at leaſt, of water, to each hole, watering equally all over the bed to the very outſide; and by thus preſerving a due moiſture in the earth, during the great heat of the ſeaſon, the plants will ſhew fruit abundantly, and it will ſet and ſwell ſurpriſingly faſt to maturity.

As to the operation of ſetting or impregnating the fruit, as directed for the frames; this, if you are anxious about having ſome of this crop fit to cut as ſoon as poſſible, may be performed to thoſe that firſt ſhew whilſt under the glaſſes; but after the vine is trained out into the full air, there will be no great neceſſity for taking that trouble, for reaſons already mentioned.

This crop will continue in bearing from about the end of May, or beginning of June, until the latter end of Auguſt, or till September.

But with reſpect to ridging-out theſe plants in May, as we formerly obſerved; the ridge, or hot-bed, at this time need not be more than three feet wide, and about two feet deep in dung, nor will it require lining; and therefore I ſhould adviſe to make it moſtly within the ground, in a deep trench, the earth of which will mould the bed; mark out, therefore, a trench, where the ground is perfectly rich and light, three feet wide, and in length at pleaſure; dig out the earth twelve or fifteen inches deep, or, in dry ground, a foot and half, if the goodneſs of the ſoil will admit, laying the earth in a range cloſe along each ſide, to be ready wherewith to mould the ridge; and if more than one ridge is intended, make them parallel, and allow a ſpace of four or five feet between.

The trench being ready, then wheel in the dung, and ſpread it regularly to the full width and depth of the trench, raiſing it, however, if in the beginning of the month, near two feet thick; but if about the middle, or after, eighteen inches depth in dung may be ſufficient; obſerving, in either caſe, to work it as firm as poſſible with the fork, and directly mould it all over the top nine inches thick, and mark out the places for the glaſſes, by placing ſticks exactly along the middle, at three feet and half diſtance, and then trim the reſt of the earth of the trench equally up to each ſide of the bed, cloſe to the earth at top, ſo as to cover every part of the dung, and form the whole into a broad bed five feet wide, aſſuming the appearance of a raiſed bed of common earth, trimming the edges ſtraight by line; this done, put on the glaſſes, and, at night, cover the whole with mats, to draw up the heat, and next day, or day after, the earth will be warm; then put in the plants, as before directed, give water, and ſet on the glaſſes, covering them, and the bed in general, on nights, with mats; likewiſe, in exceſſive rains, night or day, at firſt planting, otherwiſe it might chill the bed, being of moderate ſubſtance, ſo as to occaſion a total decline of its heat. As to their other culture, it differs not from thoſe ridged out in April, only the bed is not deſigned to be lined; but in all other reſpects the ſame management is to be obſerved.

Along the edges of the bed may be planted rows of coſs-lettuce, which will come off time enough for the plants to run.

Another method of ridging-out in this month (May) is, that, in caſes of ſcarcity of hot dung, inſtead of forming one continued ridge of dung, in a trench, as above directed, it may be worked in holes, one hole for each glaſs; dig therefore holes two feet wide, and twelve or fifteen inches deep, and three feet and half from centre to centre; obſerving, if you deſign more than one range, allow ſix feet between each row of holes; then let a large barrow-full, as much as a man can wheel, of good hot dung, be worked firmly into each hole; earth them directly nine inches deep, place on the glaſſes, and when the earth is warm, either put in ſeed, or rather plants, managing them as before directed; afterwards, at your convenience, dig and work

up

up the earth on each ſide the rows, ſo as to form every range of holes into a ſort of bed, five or ſix feet wide, for the vines to run upon; and along the edges of which you may plant rows of coſs-lettuce, as before obſerved.

By this method many of the London gardeners ridge out their main hand-glaſs crop, particularly thoſe of the Neat-houſes near Chelſea, where the ground is ſo rich, light, and warm, many of whom work ſeveral hundred glaſſes.

Their method is; the ground is generally planted with early cauliflowers the October before, under the hand glaſſes, in rows eight feet apart; in the ſpace between is ſowed radiſhes and ſpinach about Chriſtmas, or a little before or after, for ſpring crops; theſe come off early in May; then they make the holes there for the Cucumber, and the glaſſes being then ready at hand, and unemployed for that ſeaſon with the cauliflower, they are placed over the Cucumbers; the cauliflowers coming off in July, they, in each place, plant a trench of celery, or ſometimes rows of endive or lettuce; and the Cucumbers having done their beſt by the third or fourth week in Auguſt, and thoſe of the natural ground in perfection to ſucceed them, they are pulled up, and the ground dug, and directly ſown with winter ſpinach; and in September or October, the celery, endive, or lettuce, planted where the early cauliflowers grew, being all cleared off for market, the ground is dug, and either planted with cauliflowers again, or with ſeveral rows of cabbage-coleworts, at a foot diſtance in the rows, which will be fit for market by Chriſtmas; but theſe gardeners generally change the ground every year or two in different crops.

In ridging-out Cucumbers in holes, as above, if you place a few holes near a ſouth wall, paling, or reed-hedge, you may, in June, train the vines of the plants up againſt thoſe fences, both for the ſake of variety, and to improve the ſize, beauty, quality, and flavour of the fruit; for they are generally larger, more fair and free from ſpots, more ſolid, firm, leſs ſeedy and watery, than thoſe which lie on the ground.

By this practice you may particularly improve the long green, and white Turkey kinds, &c.

Or, if you place ſome branchy ſticks, as for peas, about three or four feet high, the plants being of the cirrhoſe climbing kind, they, with a little conducting at firſt, will aſſiſt themſelves in aſcending upon the ſticks, by means of their *cirrhi*, or tendrils, though, when deſigned to train theſe plants off the ground, they ſucceed beſt when trained againſt ſome kind of fences, either of cloſe, or of open work, and free to the full ſun.

*Raiſing them under Paper Frames.*

In default of hand or bell-glaſſes, a few holes of Cucumbers, for private uſe, may be brought to bearing in June, under ſhelters of oiled paper, either paſted on ridged or arched frames, made of lath, or other open work, four feet wide, ten long, and three high; or on ſmall open frames the ſize of hand glaſſes; or by paſting three or four ſheets of ſtrong paper together in a piece, each ſuch piece to cover one hole of plants, previouſly oiling it, as is directed for PAPER FRAMES; ſo in the beginning, or towards the middle of May, ridging out ſome plants, or, for want thereof, ſeed, on hot-beds, as before directed; then place on your frames directly, or, if you uſe only the ſheets paſted together, as in the latter method, firſt arch over each hole of plants with two or three pieces of hoops, &c. placed acroſs one another, eight or ten inches high, and place the paper over each arch or hole of plants, laying bricks, boards, or ſome other ſubſtance, to prevent them from being diſturbed by boiſterous winds; but either of the other two methods would be better than this: however, let either of theſe ſhelters remain over the plants day and night, till the middle or latter end of June, admitting freſh air occaſionally, covering every night during the cold weather with mats; alſo all times when it rains exceſſive hard the firſt three or four weeks after planting.

Under theſe temporary ſhelters, by aid of a moderate heat of dung, you may obtain Cucumbers a month or ſix weeks ſooner than any can be raiſed from ſeed entirely in the natural ground.

*Raiſing them in Hot-houſes.*

Cucumbers are often obtained in hot-houſes any time in winter, and early in ſpring, with leſs trouble ſometimes than in hot-beds under frames, not, however, always with ſucceſs of ſuch plentiful crops; but as pine-apple ſtoves are now common in moſt parts of the kingdom, it is worth trial, and if but a few very early fruit is obtained, it will compenſate for the trouble.

The ſeeds may here be ſown any time from October

October till March; though to have them as early as poſſible, it is proper to ſow in October; and for the greater certainty of ſucceſs, repeat it in November and December, and even every fortnight during winter; but let it be obſerved, that thoſe ſown about Chriſtmas, or ſoon after, will be conſiderably the moſt proſperous and ſucceſsful crops: let the ſeeds be ſown half an inch deep in ſmall pots of rich earth, that have been previouſly plunged in the bark-bed a day or two, to warm the mould, retaining the pots therein, and the plants will riſe in a few days, which, when two or three days old, prick in pots, as in the frame and hand-glaſs culture, plunging them alſo in the bark-bed, giving now and then very moderate waterings; and as to air, they can have it only in common with the other plants of this department; obſerving, as the plants advance in growth, to ſtop them at the firſt joint, as hath been already directed; and when they are juſt ready to ſhoot runners, let them be tranſplanted with the entire ball of mould about their roots, into large pots or boxes, to remain to fruit, but rather into trough-faſhioned boxes, about three feet long, a foot wide at top, nine inches at bottom, and ten inches deep, having them filled with the beſt rich light earth, and placed in the ſtove a day or two before; then plant two pots of plants in each trough, and give a little water: as to the proper ſituation in the ſtove for theſe boxes, &c. to remain, they may be tried in different parts; where there is room you may plunge one or more half way in the bark bed; others may be placed on top of the flues, elevating them upon bricks, or ſome other materials, ſo as there may be a vacancy of ten or twelve inches between the top of the flue and bottom of the boxes, both that the heat of the flues may have due vent, and that it may not dry the earth in the boxes too faſt, and the boxes being ſo elevated, the plants will be nearer the top glaſſes, which is of much importance to theſe plants for receiving the greater benefit of the ſun; and for which reaſon, if ſome boxes, or one long trough was erected near the top glaſſes, it would be of conſiderable advantage, which might readily be done by iron or wooden brackets, ſuſpended from the croſs-bars at top, and the proper place is along under the uppermoſt or back part of the top glaſſes, juſt over, or rather a little behind the back walk of the ſtove, that it may not ſhade the other plants, or water drop therefrom upon them, and that they may be nearer the warmth of the flues, fixing them at about twelve or fifteen inches from the glaſſes; in which ſituation, in this department, I have always obſerved Cucumber plants, at an early ſeaſon, to be more proſperous and fruitful than when more diſtant from the top lights; obſerving, however, that during the reſidence of the Cucumbers there, at an early ſeaſon, the uppermoſt tier of the top glaſſes muſt not be drawn down, but admit air occaſionally at the loweſt tier, or front lights.

When the plants are thus finally planted out in either of the above methods, your care is requiſite to ſupply them duly with moderate waterings twice a week, or oftener, if it ſhall ſeem neceſſary.

Likewiſe, when the vines or runners of the plants advance, fix up ſome neat laths for them to run upon, and to which they muſt be faſtened occaſionally as they advance in length.

When they ſhew fruit, practice the operation of ſetting them, as directed in the frame culture.

In this, the hot-houſe culture of theſe plants, different methods may be practiſed by way of experiment; as that of ſowing the ſeed and pricking the plants in pots, and afterwards tranſplanting them with balls where they are to remain to fruit, as already directed; or only juſt raiſe the plants, as above, till two or three days old, and tranſplant them into the fruiting boxes; or ſow the ſeed at once in the ſaid boxes, and ſuffer the plants to remain to fruit; or ſome plants might be plunged in the tan between the pines, and their vines ſuffered to run among them.

Try alſo plants previouſly raiſed in pots in dung hot-beds, under frames, till in the ſecond or third rough leaf; then tranſplant them with balls into the boxes in the ſtove.

Cucumber plants, raiſed in a common dung hot-bed in September or October, till in the ſecond or third joint, and then tranſplanted with balls into the ſtove, will ſometimes afford a few fruit in November and December.

Cuttings of Cucumbers, taken off five or ſix inches long from ſome healthful plants of the ſummer crops towards the end of September or beginning of October, planted in pots of rich light earth, and plunged in the bark-bed, will take root, and often break forth into runners, and produce fruit in November and December.

Cucumber

Cucumber plants may be raiſed in the ſtoves to a proper ſize to plant out in hot-beds under frames, where they are to fruit for the early crop, which will ſave the trouble of making a dung hot bed for ſowing the ſeed and nurſing the plants: ſow the ſeed about Chriſtmas in pots, and prick the plants into others, as before directed, and when in the firſt joint, and begin to ſhoot runners, tranſplant them with balls into the fruiting frames.

*Raiſing them in the natural Ground for Picklers, &c.*

In the laſt week in May, and firſt and ſecond in June, is the time to ſow Cucumbers in the natural ground, for picklers, &c. before which time neither the ſeed nor plants will ſucceed in the natural earth, nor open air.

This crop ſucceeds the hand-glaſs Cucumbers, and comes into full bearing the beginning of Auguſt, and continues bearing plentifully until the middle of September, either for picklers, for eating, or for culinary purpoſes; but it is from this crop that the general ſupply for pickling is commonly gathered.

Obſerve, that although we mention the laſt week in May, or beginning of June, for ſowing, it is, however, not every year that the weather is favourable enough to admit of performing this ſowing in May; for it muſt not be done before the weather is become warm, dry, and ſettled, as, if you put in the ſeed while cold or very wet weather prevails, or when the ground is cold and wet, it will ſurely rot; or, if any plants come up, they will acquire a ſtunted dwindling growth, and come to nothing; and of late years it is commonly the firſt or ſecond week in June before the ſeaſon is temperate enough for ſowing this crop: you muſt not, therefore, be too eager in ſowing before that time, unleſs the ſeaſon proves very fine and warm; but, at any rate, never put in a ſeed before the 24th of May, and then it ought to be only in a warm dry ſituation, unleſs, indeed, you have any ſpare hand-glaſſes, which you may place over the holes; but for ſome years paſt, the firſt and ſecond week in June has, for the general part, proved the moſt ſucceſsful ſeaſon for ſowing in the open natural ground.

The ſowing is to be performed at once in the place where the plauts are to remain to fruit.

Chuſe, therefore, for this crop, a ſpot of your richeſt ground, in any of the common quarters, open to the full ſun, either a clear ſpot, or, where there is none, may be ſown between crops ſtanding diſtant in rows, and are ſoon to come off the ground; as, between rows of cauliflowers, early cabbages, between wide rows of early beans, or in the alleys between onion-beds, particularly thoſe for culling, or in the alleys between beds of tranſplanted lettuces, or ſuch like temporary crops, that come off by the time the Cucumbers begin to advance conſiderably; however, where there is ground vacant from crops, in a proper ſituation, it ſhould be preferred, as the whole can be properly digged, and divided into proper beds.

The order and manner of ſowing is, if a clear piece of ground, let the whole be neatly dug, and then divide it into beds five feet wide, having a foot-wide alley between bed and bed; then along the middle of each bed mark out the holes or places for the ſeed at three feet ſix inches diſtance; let the earth in each place or mark be finely broken, and then hollow it with the hand in a baſon-like form, about fifteen inches diameter, and two or three deep; then, in the middle of each hole, drawing a little earth to one ſide, ſow ten or twelve ſeeds half an inch apart, and cover them over half an inch deep with the earth.

But when you are neceſſitated to ſow between other crops, as above hinted, you muſt be content, for the preſent, only to dig holes in each patch where the ſeed is to be ſowed, obſerving the diſtance in the row as before, and allow, if poſſible, ſix feet between each range of holes, ſowing the ſeed, as already directed, and when the crop comes off, the ground between the rows may be digged, and formed into beds, as before adviſed.

The crops ſowed in the above methods, is according to the common practice of the moſt eminent kitchen-gardeners, and deſigned prineipally for the vines or runners of the plants to be trained along the ſurface of the ground.

But as theſe plants are of the tribe of cirrhoſe climbers, nature having furniſhed them with *cirrhi*, or tendrils, ſeems to indicate that it never intended them to trail on the ground; therefore ſome may be raiſed in ſuch order, as for their vines to climb upon ſticks, &c. in the manner of peas; when this is intended, I ſhould adviſe to ſow them in drills, running north and ſouth, five feet diſtance, firſt forming with a hoe or ſpade a ſort of ſhallow flat trenches

trenches a foot wide, and one or two inches deep, the diſtance as above, and along the middle of each of theſe ſhallow trenches draw a ſmall drill a finger's breadth deep, in which ſow the ſeed, and cover it about half an inch with the mould; here, when the plants begin to run, place to each row ſome branchy ſpreading ſticks a yard high, whereon to conduct their runners, and on which they will alſo naturally aſſiſt themſelves in aſcending by means of their tendrils, and will produce plenty of fruit, which, by being elevated from the earth, will be fair, firm, and free from ſpots.

Or, if ſome are ſown on a ſunny border cloſe along under a wall, paling, reed-hedge, or any other fence, and to which train the plants, and here they will produce handſome fruit, clear, and free from ſpots, leſs watery and ſeedy than thoſe that lie on the ground, and much better flavoured, and conſequently preferable both for eating and pickling.

The above methods of ſowing, for training the plants upon ſticks, or againſt fences, is principally recommended for practice to a few in private gardens for family uſe, which would by no means be practicable in large grounds, where great quantities are raiſed for market.

The ſeed being, however, ſowed in either of the above methods, I adviſe, if very dry and hot ſunny weather, to ſprinkle the holes every day or two with water; but let this be done very moderately, only juſt to preſerve the earth in a middling degree moiſt; for, if the earth is rendered very wet, either by watering or exceſſive rains, the ſeeds are very apt to rot: preſerve, therefore, only a very moderate moiſtneſs, and, if the weather is hot and dry, the ſeed will ſprout in a few days; but if the ſeaſon is very dry, and the ſun ſcorching, the ſhade of a cabbage leaf to each hole, to prevent the earth from drying too ſuddenly, will prove very beneficial to the free germination of the ſeed, and the plants will riſe in ſix or eight days; at which time you will do well to watch the ſparrows, for theſe birds often devour the ſeedlings at a great rate, juſt as they iſſue from the ground.

But in ſowing this crop in warm dry ſeaſons, it is the practice of many of the London gardeners, that if the weather proves exceſſive hot and dry, ſo as to parch the earth conſiderably, they, previous to ſowing, chit or ſpear the ſeed, by ſoaking it in water; that is, they put the ſeed in ſoft water, and place it within a hot-bed frame, about twenty-four or thirty hours, or long enough for it to ſpear, i. e. germinate or ſprout half a quarter of an inch long, which they call ſpearing the ſeed; they then ſow it directly, giving water freely in dry weather, and the plants will often riſe in two or three days.

Another method of treating this crop is, that in cold wet ſeaſons, as it ſometimes happens, even in June, I would adviſe, where practicable, to raiſe the plants on a ſlender hot-bed in patches; and when about a week or ten days old, juſt beginning to ſhew the rough leaf, tranſplant each patch of plants with a ball of earth into the natural ground, in the places where they are to fruit, a patch to each hole; this is an eligible practice in bad ſeaſons, and practiſed by many of the London gardeners, who ſometimes raiſe plants enough to furniſh an acre or two of ground, and by that means have much better crops, and come ſooner to fruit by a fortnight than when raiſed in the common way in a cold wet ſeaſon, as above. The method is as follows.

In the laſt week in May, or firſt in June, make a hot-bed three or four feet wide, and fifteen or eighteen inches high, the length in proportion to the quantity of plants required; earth it directly about three inches deep, and ſow the ſeed: the method of ſowing is, to dot in the ſeed in cluſters in ſmall holes an inch and half apart, and half a one deep; that is, with the two firſt fingers and thumb, contracted at top, dot holes in the earth of the bed the above diſtance and depth; as you proceed, drop eight or ten ſeeds in each hole, and when the whole bed is thus ſown, immediately cover in all the holes evenly with fine earth: or, inſtead of dotting in the ſeed, as above, may draw ſmall drills ſouth and north the bed, near an inch deep, and two aſunder; ſow the ſeeds in the drills in cluſters, as before, and earth them over the ſame depth; but I would rather recommend dotting them in: then, in either method of ſowing, let the bed be directly arched over with hoops or rods, in order for covering on nights, and all bad weather, with mats; if the weather, after ſowing, ſhould prove hot and dry, give moderate ſprinklings of water, and the plants will be up in three or four days; and the ſeed being thus ſown in cluſters, the plants will riſe alſo in bunches, which, when they ſhew the rough leaf, are then fit to tranſplant; previouſly water them ſome hours before, that the earth may cling to their roots;

then proceed to take them up with the point of a hollow or ſcooped trowel, each cluſter or patch ſeparate, and with a ſmall ball, which will readily adhere about the fibres, placing the bunches of plants carefully in a flat baſket, to be carried to the place of their deſtination, which ſhould be previouſly digged and formed into holes, baſon-faſhion, as in the common method; break the earth fine, and plant one bunch of plants in each hole; cloſe the earth well about them, and give a little water, but they will not require ſhading; for being removed young, and with balls, they will not feel their removal; ſo repeat the watering occaſionally, and the more ſun they now have the better, and they will grow ſurpriſingly; obſerving, when they are fairly in the firſt rough leaf, they muſt be thinned to four of the beſt plants in each hole, as directed in the general culture following.

As to the general culture of this crop of Cucumbers, raiſed in either of the above methods, the principal articles to be obſerved are; that, if dry weather, after they are come up, let them be moderately watered every day or two, at leaſt; and when they have been up a fortnight, or when their firſt rough leaf is advancing, it is proper to thin them to four or five plants in each hole, reſerving the ſtrongeſt plants at equal diſtances, and mould up their ſhanks, preſſing it gently but cloſely about them, ſo as to ſpread the plants different ways, and give ſome water, to ſettle the earth where looſened by thinning out the ſuperabundant plants: if there are deficiencies in any of the holes, make them up with the beſt of the plants thinned out. After this, continue your care of watering in dry weather; it will be neceſſary three or four times a week, and ſometimes every day, and even twice a day, morning and evening, in July and Auguſt, when the weather is exceſſive hot and dry.

In the beginning of July, when the plants begin to run, let the holes be lightly hoed with a ſmall hoe, to deſtroy weeds, and looſen the earth; drawing a little mould about the ſhanks of the plants, preſs it gently between with the back of the hand, to ſeparate the plants as much as poſſible from each other, at equal diſtances, and in the direction you intend they ſhall run; let the whole ſurface be alſo lightly hoed, and if gently looſened two or three inches deep, as far as the plants will extend; it will greatly encourage them.

As the vines advance in length, it will be of much advantage to peg thoſe down which you deſign to run upon the ground, to prevent their being diſturbed by wind; and if ſome reeds or ſmall ſticks are ſpread for the vine to run upon, which might be readily effected to a few holes in private gardens, the plants will faſten themſelves thereto by their claſpers, and by keeping the fruit from the ground, preſerves them from ſpotting.

Thoſe which are intended to be trained to ſticks or fences, ſhould have that work begun when they are advanced near a foot long, and continue conducting the runners thereto occaſionally as they advance in length.

Be ſure, in dry weather, after the plants are conſiderably advanced, to water freely, as before hinted; and in July and Auguſt, when they come into fruit, and the weather hot and dry, to water every day.

Theſe crops come into bearing the end of July, or beginning of Auguſt, and continue fruiting in great plenty till the middle or latter end of September; but after the middle of that month the fruit is often ſpotty, very humid or watery; therefore, when the fruit is required for pickling, begin gathering for that purpoſe in Auguſt, and continue it a month or ſix weeks, or as long as the fruit continue fine and unſpotted.

For this purpoſe of pickling you ſhould look over the plants three times a week, to gather all the fruit that are fit; when they are from about two to three inches long, and not thicker than your finger, they are of proper ſize for pickling; obſerving, if poſſible, to gather them when they are dry and clean, each with its ſtalk, and the ſooner they are put into the pickle after gathering, the greener they will be, and more firm and criſp to eat, which are commendable properties in pickled Cucumbers.

The fruit for pickling ſell in the London markets from five to ten ſhillings per thouſand, though, in fine, favourable, and forward ſeaſons, I have known them ſold for half a crown or three ſhillings; it is amazing to ſee what prodigious quantities are brought to theſe markets in a morning; one gardener perhaps brings fifty or a hundred thouſand at a time for his own ſhare; they ſell them moſt commonly wholeſale to the oil-men, who pickle them to retail out in ſmall quantities to chandlers-ſhops and families.

The neceſſary quantity of plants to produce picklers for family uſe, is from about ten to

fifty or ſixty holes, according to the demand of the family; every ten holes will afford near a thouſand picklers in the courſe of the ſeaſon, i. e. from about the beginning of Auguſt until the middle of September.

Much wet weather is very unfavourable to this crop of Cucumbers; it chills the earth and fibres of the plants, which being naturally tender, they in ſuch ſeaſons neither produce fair fruit, nor a plentiful crop, nor is it of free growth, and the plants continue but a ſhort time in bearing before all the fruit of each gathering will be ſpotty, and very unſightly to the eye, watery, and ill-taſted.

But in dry warm ſummers, let them be duly ſupplied with water, and they will bear abundantly, and the fruit will be fair, arrive faſt to perfection, and continue fine till the autumn rains, or long dewy nights, towards the middle of September, chills the earth and plants, when the produce will begin to be both ſcanty, deformed, and ſpotted.

*Of having them late in Autumn and in Winter.*

But if Cucumbers are required in perfection for the table as late in autumn as poſſible, it is proper to place ſome frames over a few holes of the beſt plants in Auguſt, and let them be ſhielded with the lights every night, and all cold wet weather; and thus, by preſerving the plants from cold and exceſſive moiſture, they will retain a healthful and moderately free growth till October or beginning of November, producing tolerably handſome fruit.

If the plants are growing on a dung-bed, formerly a hot-bed, I ſhould alſo adviſe, towards the middle or end of September, to line it on each ſide with hot dung, to throw in a little heat, which would be of much advantage; but even if the plants are growing in the full ground, it might be done by digging a trench at the back and front two feet wide, cutting it a little under, ſo filling it with hot dung, treading it in firmly, and as it ſettles continue adding more.

Or, to have late Cucumbers, ſome might be ſown in the natural ground, in a warm ſituation, the middle of July; place a frame over, and ſhelter them all along occaſionally with the lights; they will come into bearing the end of Auguſt, and, with due ſhelter, will continue longer than thoſe ſown a month or two before.

Or, if ſome ſeeds are ſown in the natural ground the end of July, or beginning of Auguſt, and tranſplanted with balls into a ſlender hot-bed under frames, about the latter end of the laſt-named month, they will come into bearing towards the latter end of September; and with proper ſhelter, and occaſionally lining the bed three or four weeks after making, they may be continued in bearing a few all October, and greateſt part of November.

And, if ſome ſeed is ſown in a ſlender hot-bed, or under glaſſes, the latter end of Auguſt, and tranſplanted into another of moderate ſtructure in the middle of September, they will arrive to a bearing ſtate in October, and, with care, will probably continue producing a few till December.

If ſome ſeed is ſown in September, as above, and tranſplanted into a hot-bed of tolerable ſubſtance, under frames and glaſſes, in October, managing them nearly as the early plants, you may ſtand a chance of having them produce now and then a fruit till Chriſtmas; and in this bed may alſo be ſown ſome ſeed in October and November, &c. to try to extend a crop of plants ſtill farther; there is, however, no great expectations to be formed from either of theſe crops, the declining ſeaſon of the year being unfavourable to their growth; and is, therefore, only worth practiſing in ſome family gardens, by way of curioſity, where a fruit or two at an uncommon ſeaſon may be greatly valued.

But by thus continuing to ſow ſome ſeed occaſionally, from early in ſpring till late in autumn, many have cut Cucumbers every month in the year.

It is, however, to be conſidered of all theſe autumn-raiſed crops of Cucumbers, that, by the nature of the ſeaſon, they, if ever ſo well managed, can never ſucceed ſo well as the ſpring and ſummer crops; but as a few fruit in October and November, after the general ſeaſon is paſt, may be eaſily obtained by the afore-mentioned rules, it will be eſteemed a rarity, and in moſt families highly acceptable.

*Saving the Seed.*

To ſave Cucumber-ſeed, ſome fruit either of the frame or hand-glaſs crops ſhould be left for that purpoſe; for thoſe of the late crops, in the natural ground, ſeldom ripen their ſeed perfectly.

Therefore, about May, or June, or July at lateſt, mark two or three of the fineſt fruit in each hole, and theſe ſituated near the main ſtem, that there may be the greater

chance of having the plants from that ſeed ſhew fruit near home, as the gardeners term it, meaning their beginning to ſhew fruit at the firſt, ſecond, or third joint, which is a principal merit in theſe plants, particularly the early crops.

But to inſure ſtill a greater chance of having early fruiting plants, I adviſe you to leave one or two of the earlieſt frame fruit, which appear at the above mentioned joints of the plant, and this will be choice ſeed for your early framing, as the plants will ſeldom fail ſhewing fruit at the beginning of their firſt runners.

Having, however, marked the fruit for ſeed in either of the above crops, they muſt be permitted to remain upon the plants till June, July, or Auguſt, according to the forward or late growth of the fruit; obſerving, thoſe which are produced and left for ſeed in March, April, or May, will be ripe in June and July; but thoſe produced in May or June will not be ripe till the middle of Auguſt, for the ſeeds ought to be perfectly well ripened.

When they are fully ripe, cut them from the plants, and ſet them up on end againſt a ſunny wall or hedge two or three weeks, or till their outer coat begins to decay; then cut them open, and turn out the ſeeds and pulp together into a tub or other veſſel, to remain a week or two, ſtirring it up every day, that the pulp may rot and ſeparate from the ſeeds; and then add ſome water, ſtirring the whole well about with a ſtick, the pulp will riſe like ſcum to the top, and the ſeeds will ſettle to the bottom of the tub; ſo that by a repetition of two or three waters the pulp will be ſeparated entirely from the ſeed, which ſhould then be ſpread upon a mat in the open air a few days, until perfectly dry, when it ſhould be put up in bags or boxes, and preſerved in a dry room for ſowing.

This ſeed will ſupport its growing quality eight or ten years, but is in the greateſt perfection in the third and fourth years, at which age they produce more fruitful plants than younger ſeed, which is apt to fly vigorouſly into vine, and ſhew fruit ſparingly.

*Second Head.*

CUCUMIS MELO, the Melon, or Muſk-Melon, *(Melo)*.

The Melon, as we before obſerved, is, according to the Linnæan ſyſtem, a ſpecies of *Cucumis*, and conſiderably the moſt valuable ſpecies of that genus, in reſpect to the excellence of its fruit, which, for deliciouſneſs of flavour and taſte, is next in eſtimation to the pine-apple, the fleſh or pulp being both pleaſant and grateful to the ſtomach, and its ſmell and taſte indicate it of an aromatic quality.

Claſs, order, and characters, the ſame as the *Cucumis*.

Of the Melon, there is but one real ſpecies of the plant, but of the fruit there are innumerable varieties, with reſpect to figure, ſize, colour of the rind, and fleſh or pulp.

The ſpecies is,

CUCUMIS *Melo*.

*The Melon.*] Cucumis with roots compoſed of numerous, very ſmall, widely ſpreading fibres; long trailing ſtalks, divided into many branches, ſpreading on the ground, furniſhed with tendrils; roundiſh, angular, rough leaves; ſmalliſh, bell-ſhaped, yellow male and female flowers, the females ſucceeded by a large, oval, and ſometimes roundiſh fruit, often channelled, or ribbed longitudinally, having a firm muſk-ſcented fleſh, and many oblong ſeeds included in a watery pulp.

This fruit, in different varieties, is of various ſizes, from about four to ten or twelve inches in length and diameter, in moſt ſorts ripening externally to a yellowiſh colour, and ſome ripen green, and others white, but have moſtly a reddiſh fleſh or pulp, except one variety, which is green both in rind and pulp, as hereafter deſcribed.

The varieties of moſt eſtimation at preſent in the Engliſh gardens are,

*Common Muſk-Melon*——A large, oblong-oval, longitudinally-ribbed, and netted-wrought Melon, having a reddiſh tolerably rich flavoured fleſh; and the plants being of the hardier kind, generally ſet a plentiful crop of fruit.—This is alſo one of the beſt ſorts of Melon for mangoes, and for which purpoſe the London gardeners cultivate principally this variety for the ſupply of markets.

*Romana Melon*——A roundiſh, moderate-ſized, ribbed, and netted Melon, ſomewhat compreſſed at both ends, and with a reddiſh firm fleſh of a fine rich flavour, the plants good bearers, each often ſetting from about five or ſix to eight or ten fruit, and is one of the beſt ſorts, both for an early and general crop.

*Cantaleupe, or Armenian Warted Melon*—A large, roundiſh, deeply-ribbed Melon, a little compreſſed at both ends, and the ſurface full,

full of warted protuberances, and with a reddiſh firm fleſh of a moſt delicious rich flavour, of which there are ſome varieties—Large Black Carbuncled or Black-rock Cantaleupe Melon, being of a blackiſh green colour, having the ſurface covered with high, rugged, ſaxtile protuberances——Large White Carbuncled Cantaleupe Melon—Orange Cantaleupe Melon —Theſe varieties are the fineſt of the Melon kind, with reſpect to the richneſs of flavour of the fruit, and which by the Melon-eaters are preferred to all the other ſorts; but the plants being rather more tender, do not ſet fruit ſo freely, nor in ſuch plenty, they often not having more than from one to two or three fruit on a plant, and that in a three-light frame ſometimes not more than five or ſix fruit, and frequently not ſo many; as the fruit, however, obtains the higheſt eſtimation, the ſeveral varieties of this ſort are now generally valued for the principal crop in family gardens; obſerving, that, to preſerve theſe varieties diſtinct, they ſhould not be cultivated in the ſame frame with other ſorts, nor with each other, for the commixture of farina would occaſion a degeneracy; alſo by ſaving the ſeed long in the ſame garden, the fruit often gradually loſes its ſaxtile or rock diſpoſition, and the ſurface becomes quite plane, bearing great reſemblance to the Romana Melon.

This variety derives the term Cantaleupe Melon, from Cantaleupe near Rome, the place where it was firſt cultivated in Europe, brought thence from Armenia.

*Small Portugal Melon*—A ſmalliſh round Melon, having a reddiſh fleſh of a fine muſky flavour, and the plants are plentiful bearers, each often ſetting from eight or ten to twenty fruit, which, however, is more by half than ſhould be left to come to perfection.

*Green-fleſhed Melon*—An oval, moderate-ſized Melon, having an even, ſmooth, green rind, and the fleſh or pulp ripening to a greeniſh colour, which is highly flavoured.

*Large Green-rinded Melon*—A large roundiſh-oval, green, ſmooth-rinded Melon, having a reddiſh fleſh.

*Black Galloway Melon*—A roundiſh oval, middle-ſized, ſlightly-ribbed, dark-green, ſmooth Melon, having a reddiſh, rich-flavoured fleſh, and the plants excellent bearers, but the ſort not at preſent very plentiful in England.

It was brought from Portugal many years ſince by a lord Galloway.

*Netted or Wrought Melon*—An oval, middle-ſized, ſcarcely ribbed Melon, having the ſurface cloſely wrought with raiſed net-work, and hath a reddiſh fleſh.

*White Spaniſh Melon*—An oval, ſmalliſh, white, ſmooth-rinded Melon, having a reddiſh pulp.

*Zatta Melon*—A very ſmall, roundiſh, warty-rinded Melon.

Obſerve, that although all the above kinds be only varieties of the ſame ſpecies, yet, by care in cultivating them ſeparate, they may be continued all tolerably permanent.

There are many other intermediate varieties of leſs note, but a few of known good qualities is better than many different ſorts, ſome of which probably not much better than gourds; and of the varieties here ſpecified, the *Romana* and *Cantaleupe* kinds are conſiderably the moſt worthy of attention, as theſe two ſorts ripen to a much higher degree of perfection; but the other varieties alſo ripen perfectly here, and often of a rich and good flavour, though at all times inferior to the two above mentioned ſorts, more particularly the true Cantaleupe kind; however, where there are great quantities wanted, and all proper conveniencies, I ſhould adviſe, for the ſake of variety, to cultivate ſome of each ſort; but to give preference to the Romana and Cantaleupe for general crops.

The Melon plant is an herbaceous annual, and one of the moſt ſingular and wonderful of that tribe, if we conſider its ſlender and proſtrate growth, trailing upon the ſurface of the earth, and being but of ſix or eight months duration, yet produces fruit of ſuch admirable figure, ſize, and richneſs of taſte.

It is an exotic from the hot parts of the world, ſuppoſed principally of Perſia, from which country, however, it was firſt introduced into the different parts of Europe; and conſequently its culture in every part of Britain can be effected only by artificial heat, and conſtant ſhelter of glaſs, &c. till July, as at an early ſeaſon they require a temperature of heat almoſt equal to that of our pine-apple ſtoves.

The principal ſeaſon of ripe Melons in England, is June, July, and Auguſt; they, however, by different ſowings and plantings, may be obtained from May till October; but they are always in the greateſt perfection in the times before mentioned.

The flowers of the Melon are conſequently *monoecious*, like the Cucumber, as being of the ſame genus and claſs, male and female apart on the ſame plant, the males ſtanding immediately

immediately on the ſummit of its foot-ſtalk, without any appearance of germen or fruit under it, and the females diſcover the round germen or embrio fruit under its baſe, when not bigger than a pea; obſerving, that the male bloſſoms are by nature deſigned for fertilizing the female flower, as obſerved of the Cucumber, ſo muſt not be pulled off until a full crop of fruit is ſet.

*Obſervations on their General Culture.*

With regard to the propagation of the Melon, the plants being annual, are raiſed every year from ſeed, ſowed at different times in ſpring, in hot-beds of dung or tanner's bark, under frames and glaſſes, &c. they requiring continual aid of artificial heat and ſhelter, from the time of ſowing until June or July, for they will at no time ſucceed in the natural ground, at leaſt rarely perfect fruit; and each crop requires two different hot-beds, that is, to be ſowed in one, and the plants nurſed therein till a month or ſix weeks old, that they begin to ſhoot runners, then tranſplanted into a ſecond and final hot-bed, to remain to fruit.

The ſeaſon for ſowing is any time from the beginning of January until the middle of April, according to the conveniencies there may be for their culture, and time the fruit is required in perfection; for the early crops to be raiſed in January, February, and beginning of March, require very ſubſtantial hot-beds, under conſtant ſhelter of garden-frames and lights, until July; but the later crops, ſown in the middle of March and in April, ſucceed with more moderate hot-beds, and may be ridged out in April and May under hand or bell glaſſes, or oiled paper frames, and the plants will ſet and ripen their fruit under theſe ſhelters; obſerving, that the early ſowings in January ſometimes produce ripe fruit in May, but come into full bearing in June; and thoſe raiſed in February, and early in March, ripen fruit in June, July, and Auguſt; and ſowings performed any time from about the middle of March till that of April, furniſh ripe fruit principally in Auguſt and September, and ſometimes in October.

Obſerve, therefore, that, like the Cucumbers, crops of Melons may be raiſed in three different ways; under frames and lights, under hand or bell glaſſes, and under oiled paper; each of which ſhall be exhibited under a ſeparate head.

The materials principally neceſſary in their culture are,

Frames and glaſs lights for early, and hand-glaſſes, &c. and oiled paper lights, for late crops; and for each crop good mats for covering on nights; all as obſerved for the Cucumbers.

Horſe ſtable dung, a plentiful ſupply both for making the hot-beds, and for occaſional linings, which muſt be in quality, quantity, and preparation, as hinted for Cucumbers, and in the article HOT-BEDS.

But ſometimes in the Melon culture bark hot-beds are employed, or of bark and dung together, which, where tanner's-bark can be eaſily procured, on account of its regular and durable heat, is a very proper material for hot-beds in the culture of Melons, either uſed alone, or mixed with hot dung, as explained in its proper place.

As to mould, the Melon, like the Cucumber, will proſper in any rich pliable kitchen-garden earth, prepared ſome months in a heap; but the favourite and moſt proſperous ſoil for the Melon is a fine mellow loam, taken from the ſurface of a paſture field or common, enriching it with about one-third of rotten neat's dung, or thoroughly rotten dung of old hot-beds, preparing the whole in a heap, and managed as directed under the article COMPOSTS; obſerving, that when it is to be uſed, not to ſift or ſcreen any, only break it well to pieces with the ſpade.

The ſituation, or place for making the hot-beds, ſhould be dry, warm, full the to ſun, and ſheltered, as for Cucumbers; likewiſe obſerve, not to dig any trench for the early hot-beds, but make them entirely on the ſurface of the ground, for the reaſons there aſſigned.

It is generally adviſed to cultivate Melons as far as poſſible diſtant from Cucumbers, leſt, by an intercommunication of their *farina*, it ſhould cauſe a degeneracy; there is apparently ſome reaſon in this: however, when we conſider that the two plants are real different ſpecies, I believe there is no great danger to be apprehended, as in the caſe of varieties.

The ſeed, and its kind, being material articles, you ſhould be particularly careful to procure ſuch only which have been ſaved from the very fineſt fruit of the reſpective approved varieties; this, if poſſible, ſhould be two or three years old, for the reaſons obſerved of the Cucumber ſeed; but when you are obliged to uſe new ſeed, it is proper either to hang them in a paper, or phial, in a dry room

room near the fire, all winter, or in a phial, expoſed in a dry window to the ſun; or may carry them in your pockets three or four weeks, either of which expedients will dry up much of the watery parts, whereby the plants will be leſs luxuriant and more fruitful. We receive Melon ſeeds annually from France, Spain, Italy, and other hot countries; but I would caution againſt depending on theſe for a principal crop, for not being inured to this climate, the plants from ſuch would be more tender and delicate in their culture, leſs fruitful, and the fruit often of much leſs value, than thoſe of ſeeds ſaved at home; therefore, only a plant or two of theſe foreign ſeeds ſhould be raiſed at firſt, juſt to prove the quality of the fruit.

From the time of ſowing the ſeed to the maturity of the fruit, it is commonly near four months, and ſometimes longer; for the plants ſeldom ſhew fruit till they have ſhot ſeveral runners, which, from the firſt appearance of the plants, will be at leaſt ſix or eight weeks in effecting; from the appearance of the fruit till it is fairly ſet, a week or fortnight; and from its ſetting till fully ripe will be about forty days.

The proper quantity of hot-bed in the culture of Melons for private uſe is, that for the ſmalleſt family there cannot be leſs than one three-light frame for the early, and three hand or bell-glaſſes, or three holes under oiled paper, for the late or ſucceſſion crops, allowing two plants to each light of the frame, the ſame to each hand-glaſs, or hole under the paper lights; and ſuppoſing each plant, one with another, to produce about three fruit, ſo that in a three light frame, and in three holes under hand glaſſes, or oiled paper ſhelters, there will be but about from thirty to forty Melons; though of the ſmaller ſorts of Melon there will ſometimes be from ſix to ten, or twelve, or more, on a plant; but ſix or eight is as many as the plants are able to bring to perfection: however, for the ſupply of a middling family, two three light frames, and, at leaſt, ſix hand or bell-glaſſes, &c. will be neceſſary to furniſh a tolerable ſupply during the ſeaſon; and for a large family, four three-light frames, at leaſt, or twelve lights, will be requiſite, and double that number of hand-glaſſes, or holes of plants under paper frames.

We now proceed to the different methods of culture; and firſt of their early culture in frames, obſerve as follows.

*Their Early Culture in Frames by Dung Hot-beds.*

The time of year to begin the culture of Melons in frames, is January, February, and beginning of March; but when deſigned to have Melons as early as poſſible, we commonly begin in January, though the beginning of February is a more ſucceſsful time of ſowing to have a good crop; if, however, you begin early in January, it is proper to ſow alſo twice in February and March for ſucceſſion crops; likewiſe to be ready in caſe of accidents to the early plants, or that they ſhould not thrive, as is often the caſe at a very early ſeaſon.

The ſeed may be ſowed, and the plants raiſed, either in a hot-bed of early Cucumbers now at work, in the ſame manner in every reſpect as for them directed; or, where none is, make a hot-bed for a one-light frame on purpoſe, obſerving exactly the ſame rules with reſpect to dimenſions, making, framing, and earthing the bed, ſowing the ſeed, and other management, as directed for the early Cucumbers; likewiſe, when the plants have been come up three days, that their cotyledons are a little expanded, tranſplant or prick them into ſmall pots for the convenience of removal, as there directed; but of theſe, i. e. Melons, put only two plants in each pot, plunging them in the bed, and manage them as above till fit to ridge out; for the Cucumbers and Melons, being nearly of equal temperature, the ſame degree of heat, air, &c. ſuits both in this part of their culture; it would therefore be ſuperfluous to trouble the reader with a repetition, ſince the particulars are fully exhibited under the article of *The Early Culture of Cucumbers in Frames.*

In this nurſery-bed they are to be continued a month or ſix weeks, till their firſt runners begin to advance; obſerving, as their ſhanks riſe in height, to earth them up by degrees with fine mould, till the pots are full, for this will greatly encourage them, and they will come faſt into the rough leaf, and begin to form joints and ſhoot runners.

Obſerve, when their two or three firſt rough leaves are fully expanded, and another forming in the centre, appearing like a bud, which part being alſo the end of an advancing ſhoot, it ſhould juſt at this period of its growth be ſtopped, i. e. cut or pinched off cloſe to the ſecond or third leaf, as adviſed for the Cucumbers, to procure lateral ſhoots, called runners; for it is from theſe, or others iſſuing from them, that we are to expect the

fruit;

fruit; and when theſe firſt runners appear, the plants are ready for ridging out into the fruiting hot-bed.

The plants from the time of ſowing, till arrived at the above ſize for ridging-out, take about five or ſix weeks growth.

The ridging-out, or fruiting hot-bed, ſhould be prepared in due time to receive the plants when arrived to the proper age and ſize above mentioned; obſerving, to prepare freſh hot dung a week or two in a heap, as for the Cucumbers, ſufficient for one or more three-light frames; let the bed be made entirely on the ſurface, for the opportunity of lining, carrying it up three feet and half, or four feet high, raiſing the back or north ſide three or four inches higher; directly put on the frame and lights, to defend the bed from chilling rains, and to draw up the heat, tilting the glaſſes behind for the ſteam to paſs away; and in a week, or ten or fifteen days, according to the ſubſtance of the bed, its firſt great heat will abate; then prepare to mould it, and put in the plants, obſerving the neceſſary precautions, as for the Cucumber beds.

The bed being ready, as above, then wheel in your prepared mould, and lay juſt under the middle of each light about a buſhel of it in a heap, for the immediate reception of the plants, forming each heap into a ſort of conical hillock about fifteen inches high; and by thus having the hills of earth this height, is proper both that the plants may be near the glaſſes, which is of importance in early work, and to allow them a good depth of earth; for they ſhould generally have a greater depth of mould than Cucumbers, the plants being more impatient of moiſture by watering, which is alſo prejudicial to the proſperity and flavour of the fruit, that, therefore, by allowing a good depth of earth, they will ſhift much longer without the aid of water: when the hillocks are thus formed, directly earth the other parts of the bed within the frame three inches thick, juſt to keep down the ſteam riſing immediately from the dung; then ſhut down the lights, and when the earth is warm put in the plants.

In a day or two the heat of the dung will have ſufficiently warmed the hills of earth; then bring the plants in their pots; being two in each, plant one pot of plants, with the balls of earth about their roots, in the middle of each hill, as directed for the Cucumbers; and if the mould ſhould appear dry, give a little water towards the outſide, being careful not to wet the plants much at this time; and as ſoon as planted ſhut down the lights, to draw up the heat about the roots of the plants, but tilt them again in due time, to paſs off the ſteam.

The plants being now ridged out into the fruiting hot-bed, obſerve, that as the glaſſes are to be continued conſtantly on the frames till July, your daily care is to admit freſh air at all opportunities in calm weather, by tilting the lights behind from about half an inch to two, three, or four high, according to the temperature of the heat and ſteam of the bed, and that of the outward air, which muſt be alſo obſerved occaſionally on nights at firſt ridging-out, if there is a great ſteam, for this muſt not be pent up, nor ſtagnated for want of air; cover the glaſſes alſo every night with mats, one or two thick, as ſhall ſeem neceſſary, but never let them hang down all over the ſides of the frame and bed, as often done, which would draw up a violent ſteam, and exclude the air too much from the plants, and draw them up weak and of a yellow colour; give water alſo occaſionally when the earth appears dry: obſerving, that in the performance of all of the above works in this bed, to follow ſtrictly the ſame rules as exhibited in the ridging-out bed of early Cucumbers; but to keep in mind, that Melons being rather impatient of moiſture, muſt have it more ſeldom, and leſs in proportion, than for Cucumbers, eſpecially near the main ſtem and principal roots; for by much moiſture theſe parts are apt to canker and rot, ſo ſhould be watered moſtly at ſome diſtance from theſe principal parts, and never to wet the vine much at an early ſeaſon; but when there is not leſs than twelve or fifteen inches depth of earth on the beds, they will not need water oftener than once a fortnight; and ſometimes, when the earth is of a loamy nature and depth as above, and preſſed down cloſe, that it may the better retain its natural moiſtneſs, the plants, after two or three waterings, till they have firmly eſtabliſhed their roots, will often ſucceed without, or, at leaſt, with very little more water; and in which caſe they generally ſet their fruit freely, and it ripens to a rich and high flavour, for redundancy of moiſture retards the ſetting of the fruit; and although, after it is fairly ſet, occaſional waterings will encreaſe its magnitude, yet much of it greatly debaſes its flavour and taſte; but on the other hand obſerve, that where the earth of the beds is of a light

texture,

texture, or of but a moderate depth, the plants will all along require occaſional waterings, eſpecially in warm ſunny weather; let it however be remembered, that when the plants exhibit their firſt ſhew of young fruit, no water, or as little as poſſible, ſhould be given, until the fruit is ſet as big as large walnuts, when, agreeable to the nature and proportion of earth, and other rules as above mentioned, and as hereafter hinted, uſe your diſcretion accordingly in watering.

Examine with care for the firſt week after ridging out, that the earth of the hills and roots of the plants do not receive too much heat from the violence of the bed; and if there is danger, remove ſome of the earth around the lower part of each hill; and if any is burned at bottom, add directly ſome freſh in its ſtead, and in a few days or a week the burning quality will ſubſide; then replace the removed mould again about the hillocks.

After danger of burning is paſt, cheriſh the heat as much as poſſible, by laying dry long litter around the ſides of the bed, to defend it from chilling wet and cold piercing winds.

When the heat begins to decline conſiderably, be ſure to revive it as ſoon as poſſible, by adding a ſubſtantial lining of hot dung to the ſides of the bed at different times, as practiſed to the Cucumber beds, uſing the ſame precaution of earthing the top, &c. to prevent the ſteam of the linings entering under the bottom, or at any part of the frame; for the rancid ſteam coming directly from the dung would deſtroy the plants.

When the fibres of the plants begin to advance through the hills of earth, let ſome freſh mould be layed in the frame at different times to warm, and by degrees add each parcel around the hills, till the whole bed is gradually moulded nearly as high as the top of them; but rather let the top of each hill be about an inch higher, that the main ſtem and principal roots may be preſerved moderately dry, otherwiſe, being watered, would ſoak to theſe principal parts, and cauſe them to rot, as being very impatient of copious moiſture from watering, &c. therefore, according as the mould is occaſionally added, obſerve the afore-mentioned precaution; alſo to preſs it down cloſe, that by lying compact it may retain a due moiſture in itſelf the longer, ſo as the plants will require to be but ſeldom watered.

As the runners of the plants advance, diſpoſe them with regularity, and when they are three joints long, if no young fruit appears, it is proper to perform a ſecond ſtopping, by taking off the end of the extreme joint, to promote a more ſpeedy ſupply of other lateral runners, which, together with others, naturally ariſing from them, will ſufficiently ſpread the bed with vine; and it is from theſe lateral ſhoots we may generally expect ſoon to ſee plenty of young fruit.

At the firſt training the vines, as above, if ſome dry and clean reeds are thinly ſpread upon the ſurface of the bed for the vines to run upon, it will preſerve all the runners and young fruit from the damp of the earth, as well as prevent the earth and upper fibres of the roots from being dried too faſt by the ſun; ſome, for the above purpoſes, cover the bed all over cloſely with plane tiles; but this I ſhould think rather excludes the neceſſary benefit of ſun and air, too much from the earth and roots of the plants.

When the young fruit begins to appear, it is of much importance to ſupport a due temperature of heat in the beds, by occaſional linings, &c. do not omit this, becauſe the whole ſucceſs of having the plants ſet a regular and a plentiful crop of fruit depends on a good bottom heat, both to warm the earth ſufficiently about the fibres, as well as the internal air of the frame; for theſe fruit being ſo extremely tender whilſt young, that without a proper heat they ſet very ſparing and ſtragglingly, generally aſſuming a ſlow, ſtunted, and irregular habit of growth; maintain, therefore, the neceſſary degree of heat, and the fruit will ſet freely, and ſwell faſt in magnitude.

At this period alſo of the firſt appearance of the fruit, I ſhould adviſe to forbear watering, if poſſible, till the fruit is ſet as large as good walnuts, as we above obſerved; obſerving, that if the plants are growing in a tolerable depth of ſoil of a loamy nature, they will ſhift very well without any during that period, or longer, unleſs the earth ſhould be very dry indeed, and then let them have it but ſparingly; for if any conſiderable portion of water is given when the fruit is ſetting, the vine will acquire a glut of ſap, and continue ſhooting with great luxuriancy, which is contrary to the nature of theſe young fruit, as, being of ſuch a delicate temperature in their infant ſtate, and even during their minor growth, that the exuberant quantity of ſap in the branches cauſes them to turn yellow, and drop off ſoon after they have bloſſomed,

and ſometimes after they have ſet as large as an egg, and more eſpecially if there is not a due degree of warmth in the beds.

According as the young fruit appears, you will obſerve it accompanied by abundance of male bloſſoms; theſe muſt not be picked off, as too often practiſed, their *pulvis antherarum*, or powder of their antheræ, being abſolutely neceſſary for fecundating the female flowers, and fertilizing the young fruit; it is therefore of importance, not only to retain theſe flowers, but that to aſſiſt nature, it is proper, in the early crops, to perform the operation of ſetting, i. e. of applying their antheræ to the ſtigmata of the female bloſſoms, as directed for the Cucumbers, uſing for this purpoſe ſuch male flowers whoſe antheræ are duly ripened, and well furniſhed with *farina*, which you may readily know by previouſly applying the antheræ gently to the thumb nail, to which ſome of the *pollen*, if ripened, will adhere; ſo uſing one or two males to each female bloſſom, and it will be found to aſſiſt greatly in ſetting the early fruit.

Air, at this time of bloſſoming, will alſo be particularly beneficial in promoting the free ſetting of the fruit; do not omit therefore to admit it every mild day, according to the rules formerly mentioned.

After ſetting the fruit obſerve, that as they are moſt commonly produced on the lateral runners, iſſuing from the ſides of the main vine, and that exuberancy of ſap retards their ſetting, I would adviſe, if your plants are rather luxuriant, that, to reſtrain the ſap from flowing too abundantly into the ſetting fruit, inſtead of ſtopping the end of the runner, as often done, rather turn it carefully curve-ways, ſo that the end may incline towards the main ſtem, whereby the ſap will be directed from the bearing runners, and its courſe continued principally into the more luxuriant branches; and the ſooner this is done the better, which, after the fruit is ſet, and a little advanced in growth, muſt be turned again into their former poſition. Many perſons prune off the ends of the bearing runners a joint or two beyond the fruit, in order that the whole nouriſhment of that branch ſhould be directed to it, to make it more certainly ſtand; but this has often the contrary effect, ſince ſtopping or ſhortening a branch promotes its drawing a greater quantity of ſap, which, as we above obſerved, is contrary to ſetting theſe fruit; therefore, thoſe branches on which the ſetting fruit are immediately ſituated, ſhould not be ſtopped until the fruit is fairly ſet, and full as big as a large walnut.

Neither is it proper to ſtop many of the runners, which would occaſion their throwing out numerous ſhoots, and cauſe a great confuſion of vine.

As the fruit ſets, and has attained nearly the ſize juſt mentioned, the branches on which they grow, if they were turned towards the main ſtem, as above adviſed, ſhould now be reconducted into their former directions, that the ſap may now find a freer paſſage to nouriſh the fruit.

Likewiſe, as the fruit ſets, lay a piece of clean dry tile under each, to preſerve it the better from the moiſture of the earth.

The quantity of fruit to be expected to ſet and arrive to perfection, is from about two or three, to eight or ten upon each plant; but this is according to the ſorts, for the Cantelupe Melon ſometimes does not ſet above two or three on a plant; on the other hand, the Romana will ſometimes ſet and ripen eight or ten, and ſometimes many more fruit will ſet than the plants are capable of nouriſhing; but, when this is the caſe, they ſhould be thinned; and even of the ſmaller kinds leave only about ſix or eight of the moſt promiſing fruit upon each plant, and not more than five or ſix of the larger kinds, and never leave more than one fruit upon the ſame runner, and that which is neareſt the main vine is generally the moſt eligible to leave, though it is beſt to fix upon that of the forwardeſt and handſomeſt growth.

After a tolerable crop of fruit is ſet, and they advanced in magnitude, if the earth of the bed is dry, take the firſt opportunity of a mild day to give a good watering, eſpecially if the bed is kept to a proper heat, which, according to the nature of the earth, and its depth on the beds, may be afterwards either wholly diſcontinued, or leſs or more repeated, as you ſhall ſee occaſion by the temperature of moiſtneſs, or dryneſs of the earth; obſerving, in giving water, let it be rather moſt towards the ſides of the bed, ſo as ſtill to preſerve the main ſtem and principal root always moderately dry.

Continue alſo admitting air at all opportunities every day when the weather is fine, which is alſo very beneficial to the free growth of the young ſwelling fruit.

Still, likewiſe, continue to ſupport a due temperature of heat in the bed by occaſional linings with the uſual care, even till

May;

May; for, by maintaining a bottom heat, the fruit will ſwell freely, continue a regular growth, and be in a little time ſurpriſingly forwarded in magnitude. In applying the laſt lining in April, or beginning or middle of May, it is proper to earth it at top equal in depth to that of the bed, as obſerved of the Cucumber, and by raiſing the frame the fibres of the plants will ſtrike into the mould, and receive very great benefit, as will be evident from the healthful appearance of the plants, and free growth of the fruit; but obſerving, this part ſhould be defended from great rains with mats, that the extreme fibres may not receive and convey too much moiſture to the vines and fruit, otherwiſe it would be more adviſeable to confine the fibres wholly within the frame.

Shading the plants occaſionally from the ſun may be neceſſary in very hot days, when the ſun is ſo powerful as to endanger ſcorching their leaves, &c. obſerving the ſame rules as for the early Cucumbers.

As the leaves of the plants grow large, and preſs againſt the glaſſes, continue to raiſe the frame at bottom three inches; and as, in doing this, the earth next the frame will be diſturbed, directly therefore make good all inequalities; and, if the leaves are conſiderably crouded, it is proper to thin them a little in proportion, ſo as that the young fruit may receive the neceſſary benefit of the ſun and air.

If, after a due quantity of fruit is fairly ſet, and advancing in growth, the vine is greatly crouded, it is proper to regulate them, by cutting off cloſe all ſmall runners, proceeding from the principal fruit-branches, and others, and any luxuriant ſhoots that ſupport neither bearing runners nor fruit, and ſuch other vine as your obſervation ſhall judge to be ſuperfluous or unneceſſary, cutting them off quite cloſe, which will greatly encourage the free growth, and promote the ſize of the Melons.

In May and June, as the vines of the plants will be advanced to the ſides of the frame, if you have a full crop of fruit fairly ſet, they may be pruned ſo as to confine them within due compaſs; or, if you would have as many fruit as poſſible to ſucceed each other, they may be ſuffered to run out from under the frame upon the top of the lining, to produce ſome late fruit to ſucceed thoſe already ſet within the frame, raiſing the frame high enough at bottom for that purpoſe towards the middle of June; obſerving, when the vines are thus trained out, to cover them every night, and all very wet weather, with mats; for the glaſſes muſt alſo ſtill be continued on the frames till the weather is become quite ſettled and warm towards the end of this, or in next month (July), and then only taken off a few hours in the warmeſt time of the day, and always put on at night and all wet weather.

When the fruit is nearly full grown, no water, or at leaſt very little ſhould be given; for moiſture will conſiderably retard its ripening, as well as rob it of the richneſs of its flavour. At this period of growth let each fruit be placed upon a brick, or ſome flat tiles, placed one upon another, to raiſe it a little above the leaves, to receive the greater benefit of the ſun and air, whereby its flavour and reliſh will be conſiderably improved, being careful to turn it every three days, that every part may equally enjoy the benefit of the ſun's influence; obſerving alſo, at this time, to admit a large portion of freſh air every mild day, by tilting the lights ſeveral inches behind, or in front, in very hot weather, which will alſo contribute very much to the rich flavour of the ripening fruit.

From the ſetting of the fruit to its maturity, it takes commonly about ſix or ſeven weeks, and ſometimes more.

The maturity of the fruit is known ſometimes by its cracking at the baſe, as if it would ſtart or recede from the ſtalk; ſometimes by its inclining to a yellow colour; frequently by imparting a fragrant odour; and when the top of the fruit is ſoft, it is always a ſure indication of ripeneſs; therefore, obſerving theſe appearances of maturity, let the fruit be cut at the proper time; for if ſuffered to remain on the vine a day or two longer, it will looſe much of its flavour. Let it be cut in a morning before the ſun ſhines hot to evaporate its rich juices, cutting each fruit with all its ſtalk, and lay it in a dry but cool airy place till it is wanted for table.

In the latter end of June, and in July, if the weather is dry and warm, the plants may be gradually inured to the full air, by ſhoving the glaſſes off a few hours in fine dry days; but let them not have much rain, leſt it rot the main ſtem of the plants, and it would alſo debaſe the flavour of the fruit; therefore retain the glaſſes ready at the back of the frames, to draw on every night, and all very wet and boiſterous weather.

*Their Culture under Hand or Bell-glaſſes.*

Principal crops of Melons, to ſucceed the forward crops in frames, are moſt commonly obtained by ridging out plants in hot-beds, under hand or bell-glaſſes, in April or May, for they will then, and not before, ſucceed by this mode of culture; therefore, that for the main crop to come in after Midſummer, you may ſave the expence of frames, as obſerved of the Cucumbers; or if the frames are all employed, or that you are not ſufficiently provided with ſuch conveniencies, you may always have a good crop of Melons under theſe kind of glaſſes, ripening in July, Auguſt, and September.

The culture of Melons under theſe hand or bell-glaſſes is effected by ſowing the ſeed in March or April, in a nurſery hot-bed, under frames and lights, and when the plants are about a month old tranſplant them into ridges or hot-beds, under the above glaſſes, to remain for fruiting; but, in default of frames, the plants might even be raiſed entirely under hand or bell-glaſſes, placed on a hot-bed, ſowing them in April, and tranſplant them into a freſh hot-bed in May, under the ſame ſort of glaſſes, or oiled paper lights; they will ſometimes come in for a tolerable crop in Auguſt and September; however, the moſt eligible practice is, where poſſible, to ſow and forward the plants in a hot-bed, under frames, pricking the young plants in pots, ſo continuing them in the frame hot-bed till large enough to ridge out, then tranſplant them with balls into the fruiting hot-bed.

The moſt proper period of time for ſowing the above crops is, the third and fourth week in March; but, if poſſible, for the main crops, never be later than the firſt week in April.

And the time for ridging-out the plants under theſe glaſſes, is from about the eighteenth or twentieth of April until about the middle of May.

For, it muſt be remembered, that the plants for theſe hand-glaſs crops muſt never be raiſed nor ridged out before the above-mentioned times, otherwiſe they would advance too forward in growth, and fill the glaſſes before the nature of the ſeaſon admitted of their being trained out, unleſs ſheltered by paper frames, as they muſt not be confined within the ſmall compaſs of theſe glaſſes, longer than the beginning or middle of June, that the weather becomes ſettled and warm; nor ought the principal crops to be ſowed nor ridged out later than the times above ſpecified, becauſe they would not be forward enough to ripen their fruit in perfection before the approach of cold weather in autumn.

The ſeed may be ſown, and the plants raiſed large enough for ridging out, either in the hot beds of forward Melons or Cucumbers now at work under frames, or in a ſmall hot-bed made on purpoſe for a one-light box, &c. earthed a few inches deep, ſowing the ſeed either in pots half an inch deep, or in the earth of the bed, drilling it in that depth, ſo managing the ſame as for the ſeedling Melons and Cucumbers for the frames; prick the plants alſo in pots, when a few days old two in each pot, as in the frame crops, giving them nearly the ſame culture; and having expanded their two firſt rough leaves, ſtop them at the firſt joint, as there directed; and when a month or five weeks old they will begin to ſhoot runners, and ſhould then be ridged out into the fruiting hot-bed.

Therefore you muſt forecaſt to prepare the dung, and make the ridges or hot-beds in proper time, to be ready to receive the plants at the above period of growth.

The dimenſions of the fruiting hot-bed ſhould be four feet and half wide, and, if made in April, two feet and half, or a yard high; and even if made early in May, two feet and half depth of dung will be requiſite; nor ſhould it be leſs than two feet high, made in any time of that month; and the length in proportion to the number of glaſſes you intend working, allowing them at a yard and half diſtance from centre to centre, in one row along the top of the bed; obſerving, that if the plants are ready for ridging out in April, or beginning of May, I would make the bed entirely above ground, for the opportunity of lining the ſides when the heat declines; or, at this ſeaſon, if the ground be tolerably dry, ſo as there will not be much danger of water ſtanding, the bed may be made in a trench, for the advantage of having it retain its heat the longer, making the trench four feet and half wide, and eighteen or twenty inches deep; but obſerving, that in three weeks after the bed is made, the trench muſt be widened a foot and half on each ſide, and to the full depth to admit of a lining of dung that width and depth to each ſide of the bed; for hot-beds made for theſe plants at either of the above mentioned times, either on level ground or in a trench, will receive

receive conſiderable benefit by having a lining of hot dung added to each ſide in three or four weeks after making, which will not only throw in a freſh heat, but, by being earthed at top, gives an additional width for the roots and vines of the plants to extend; obſerve likewiſe, that if more than one range of hot beds are intended, make them one before another in a parallel direction, allowing a ſpace of four or five feet between, which, if afterwards entirely filled up as high as the ridge with hot dung and earth will be of great advantage to the plants.

The ridge or ridges being made, then, according to the rules and precautions exhibited in the hand-glaſs crop of Cucumbers, prepare to earth it with the proper compoſt for the reception of the plants, firſt marking out with ſticks the places for the glaſſes, in a row along the top of the bed, at a yard and half diſtance; and then, on each place where the glaſſes are to ſtand, lay about a wheel-barrow full of mould in a hill fifteen inches high at leaſt, and wide enough for a hand-glaſs, for this depth of earth is as neceſſary here as in the frame crops, covering the other parts of the bed between the hills only three inches deep at preſent, that the burning ſteam and heat may have due vent, yet to prevent it from evaporating too ſuddenly, but is afterwards to be gradually earthed almoſt as high as the top of each hillock: as ſoon as the bed is thus earthed ſet on the glaſſes, one upon each hill of earth, covering the whole with mats at night, to draw up the heat the ſooner, and in a day or two the earth will be warm enough to receive the plants.

When the earth, therefore, under the glaſſes is properly warmed by the dung, then, having previouſly watered the pots of plants the day before, that the earth may adhere in a ball about their roots, proceed to plant one pot of two plants under each glaſs, removing the plants out of the pots with a ball, in the manner directed in the early Cucumber hotbeds; and levelling the tops of the hillocks broad enough for each glaſs to ſtand; make a wide hole in the middle, and plant the ball of plants, giving directly a moderate watering, and put on the glaſſes, which muſt remain conſtantly over the plants, and be covered every night for a month or two, and all bad weather, with mats.

They being now ridged out, obſerve, if their removal cauſes them to flag their leaves at the approach of the ſun, it is neceſſary to indulge them with a moderate ſhade the firſt three or four days, when ſunny, or till they ſtand the ſun fully without flagging.

Freſh air muſt alſo be occaſionally admitted in the warmeſt time of every fine day, by tilting the warm ſide of the glaſſes an inch, or a little more or leſs, according to the heat of the bed and temperature of the weather, having particular attention to ſhut them down cloſe in due time in the afternoon, or as ſoon as the weather changes cold, keeping them cloſe on nights; alſo in all unfavourable weather in the day time, unleſs there is a very great ſteam, when, during its continuance, the glaſſes muſt not be kept too cloſe; and, if the weather is then cold or windy, the place where they are tilted may be defended with a mat; obſerving, as the warm weather advances, and the plants make progreſs in growth, a larger portion of freſh air muſt be admitted, to harden the runners gradually, in order to be trained out from under the glaſſes in June.

Cover the glaſſes and the whole ſurface of the bed every night with large mats, which muſt be conſtantly practiſed until the beginning or middle of June, or longer, if cold weather renders it neceſſary.

Likewiſe, in all heavy or cold rains, at any time, night or day, from the time of ridging out to the maturity of the fruit, particular care ſhould be taken to defend the whole ridge, by a good covering of mats, for much wet would ruin the crop.

Waterings in warm weather once a week or fortnight, in moderate quantities, may be neceſſary, according to the rules mentioned in the frame crops.

In a week or fortnight after ridging out, when the heat of the bed is become moderate, begin to earth the whole gradually almoſt as high as the top of the hills on which the plants ſtand, preſſing it down from time to time, that it may retain its moiſture the longer, ſo as the plants may not require much water, for the reaſons explained in *the Frame Culture*, raiſing the whole nearly equal with the ſummits of the hillocks, preſerving the middle of each rather higheſt, to prevent moiſture from ſoaking to the main ſtem, &c. as formerly cautioned.

Lining the ridges will be neceſſary in about three weeks after they are made; this ought not to be omitted, eſpecially to thoſe made in April, or early in May; and having for this purpoſe a quantity of well prepared hot dung,

add

add it to each ſide of the bed, a foot and half wide at leaſt, and full as high as the dung of the bed, and directly earth it at top to the thickneſs of that on the ridge; and thus, by the addition of the linings, that beſides the advantage of renewing the heat, it widens the bed to about ſeven feet, and forms a fine ſcope for the fibres and vines of the plants; obſerving, if there are two or more ridges ranging parallel, that if the whole ſpace between was afterwards gradually filled up with hot dung and mould, it would prove ſtill more beneficial to the plants.

Having directed ſtopping the plants at the firſt joint to procure lateral runners, if theſe laterals are alſo ſtopped at the third joint they will more ſpeedily furniſh a farther ſupply for bearing, as obſerved of thoſe in the frames.

About the end of May, or beginning of June, the firſt ridged-out plants will have nearly filled the glaſſes with their runners, at which time do not omit indulging them with a large portion of free air at all opportunities, by tilting the glaſſes every mild day two or three inches high, or in proportion to the temperament of the weather, ſo as to ſtrengthen the runners, and harden them by degrees to the full air, which, in June, when ſo much advanced in growth that they can be no longer contained within the glaſſes, muſt be trained out; the glaſſes muſt then be raiſed three inches on every ſide, on props, as for the Cucumbers, and the runners trained out with regularity; but if ſome dry reeds are previouſly ſpread upon the ſurface of the bed, for the vine to run upon, it will preſerve them and the young fruit from the damp of the earth; obſerving, the glaſſes are to remain conſtantly over each hole of plants, to protect the main ſtem and principal roots the better from wet and other inclement weather, but are now to remain day and night ſupported on the props, as above: continue alſo the nightly covering of mats for the firſt fortnight, at leaſt, after the plants are trained from under the glaſſes, to protect the tender vines till inured to the full air.

Obſerve, likewiſe, that as Melons are rather impatient of copious moiſture, it is adviſeable, after being thus trained out, to protect them with great care from exceſſive rains and cold, at all times, day or night, by proper covering; the moſt effectual means for this purpoſe is, to place oiled paper frames over the ridges, as ſoon as the vines are trained out, as directed in their culture under *Paper-frames*: however, in default of theſe conveniencies, I would adviſe to arch the bed over with hoops or rods, &c. juſt to the height of the hand-glaſſes; ſo having good thick mats or canvas cloths always ready to draw over the arches, in time of heavy or cold rains, and bluſtering winds, will be found of very conſiderable advantage, ſince a few hours violent rain often injure the plants ſo greatly, that they never after recover, ſo as to produce handſome fruit, nor bring any tolerable crop to perfection.

But when the beds are covered with paper frames, theſe remaining conſtantly on the beds, effectually defend them at all times, and admit a due portion of light, &c. to the plants.

If, however, you uſe only mats or canvas, to cover occaſionally in cold nights and bad weather, let theſe be always taken wholly off betimes every fine morning, or as ſoon in the day as the weather is favourable.

In June and July the plants will ſpread their runners all over the bed, and will ſhew fruit abundantly, at which period of ſhewing fruit very little water ſhould be given, eſpecially if there is a proper depth of earth on the beds, ſtill obſerving the ſame rules for this, as directed in the *Frame Culture*; but in very hot dry weather, after the firſt tolerable ſhew of fruit is fairly ſet, and begin to advance in magnitude, a moderate watering once a week, or ten or twelve days, whilſt the fruit are taking their growth, will encourage them, promote their ſize, and encreaſe the ſubſtance of their fleſh, being careful to apply the water moſtly towards the ſides of the bed to the extreme fibres, ſo as to preſerve the main ſtem and principal roots from receiving too much wet, and be ſure never once to overwater the beds, which might prove of very bad conſequence; but for the greater convenience of watering at this period, a deep drill may be drawn around the outſides of the bed, and the neceſſary ſupply of water poured into theſe drills, whereby the fibres will receive its benefit without wetting the leaves, branches, or fruit; but when the fruit is nearly full grown, give as little water as poſſible.

With reſpect to uſeleſs and ſuperfluous or unneceſſary branches or runners, if there is any, it is eligible culture to clear them off occaſionally, to prevent confuſion of vine, and for the proſperity of the fruit, executing it according to the rules laid down for thoſe of the frame plants.

Obſerve alſo the ſame of ſuperfluous fruit, leaving

leaving only ſuch a due quantity of the moſt promiſing and beſt-ſituated in each hole, as the plants can be expected to bring to perfection.

During the growth of the fruit, obſerve, that if the ridges are not covered with oiled paper, but only with the hand-glaſſes, &c. and the weather ſhould prove rather unfavourable or wettiſh, and that many of the fruit are ſituated on the advanced vine without-ſide of the glaſſes, it is adviſeable either to move the fruit gently under their own reſpective glaſſes; or rather, where there are any ſpare glaſſes, bring theſe and place over the fruit, contriving each glaſs to cover as many as may be convenient; for it is neceſſary thus to protect theſe fruit from injury of weather, ſupporting each glaſs two or three inches high on props; and this ſhelter of the glaſſes will greatly improve the ſize and flavour of the fruit: but in unfavourable ſeaſons oiled paper frames are the moſt effectual, becauſe, being placed all over the ridge, they defend the plants alſo, as well as the fruit, both from cold and wet; or, in cold wet ſeaſons, if there are any ſpare garden-frames and lights, theſe might be placed over the ridges, as ſoon as they are at liberty in June, July, or Auguſt, ſo to defend the plants and fruit the remainder of the ſummer, by ſhoving on the lights in all unfavourable weather, day or night.

When the fruit is encreaſed ſomewhat conſiderably in growth, it is proper to turn them every three or four days, that they may ſwell equally, and each ſide have an equal benefit of the ſun.

Their ripening is determinable by the appearances of maturity, mentioned in the culture of the early crop, obſerving alſo the ſame rules as there adviſed in cutting them for table.

*Raiſing them under Paper Frames.*

Melons are alſo fruited in great perfection under oiled paper frames, by placing them over thoſe ridges of plants which are ridged out in April and May, for they will not ſucceed in earlier crops, but for the crops juſt mentioned, they are conſiderably the moſt eligible ſhelters to place over the ridges in the middle or latter end of May, or beginning of June, after the plants have filled the hand-glaſſes, theſe being then previouſly removed entirely away, and the paper frames placed upon the bed; for theſe frames being made of due width and proper length to cover the whole ridge, and the paper being well oiled with linſeed-oil, to render it proof againſt wet, and more pellucid or tranſparent to admit the rays of light and heat in a proper degree, that they are continued conſtantly upon the ridges, whereby the plants are at all times protected from all inclement weather, either wet, wind, cold, or heat, as, although the paper admits the rays of light, &c. yet it, at the ſame time, affords the moſt agreeable ſhade from the ſcorching ſun.

Theſe frames are formed either like the roof of a houſe, or archways, like the till of a waggon, four or five feet wide, ten long, and a yard high, framed of thin ſlips of wood and lath, or broad hoops, &c. but thoſe made ridge-faſhion with two ſloping ſides, in the manner of the ridge of a houſe, are rather the moſt eligible form, becauſe on one ſide, may be made two pannels, to open with hinges towards each end, and each pannel about two feet wide, being convenient for giving air, and other neceſſary work: in either of the above forms the frames are conſtructed in an open manner, having the ribs or ſpars, a foot or fifteen inches aſunder, or at ſuch diſtances as to admit of paſting the ſheets of paper commodiouſly; but previous to paſting on the paper, draw lines of packthread, &c. acroſs corner-ways from rail to rail of the frame, drawing other lines interſecting or croſſing the firſt, theſe being neceſſary for ſupporting the paper the more effectually againſt the power of wet and wind; then having ſome ſtrong printing paper, let it be a little damped, that it may not ſink in hollows after it is fixed on the frame; therefore, as ſoon as it is damped, paſte it on the frame; two large ſheets will generally range from bottom to top, paſting it ſecurely to the rafters and rails, and ſo as the middle of each ſheet reſts upon the interſections of the packthread lines; and when the paper and paſting is thoroughly dry, bruſh the outſide all over lightly with boiled linſeed-oil, then ſuffer the frame to ſtand in a dry ſhed till the whole is perfectly well dried before it is uſed. See PAPER FRAMES.

But for want of regular made frames, a quantity of hoops or rods might be placed acroſs the ridges of plants arch-ways, ſticking both ends into the earth, about a foot aſunder, and two high, ſo drawing lines of packthread along from hoop to hoop, both to ſteady the arches, and help to ſupport the paper;

paper; then paſte a quantity of ſtrong paper in large pieces about three or four ſheets in width, and in length proportionable to that of the ridges they are to cover; then oil them with linſeed-oil, and, when thoroughly dry, ſpread them over the hoop-arches, and ſecure them by lines drawn from end to end; and that for the admiſſion of air, and doing other neceſſary work, one ſide of the paper is readily turned up at bottom as far as convenient.

In reſpect to the mode of uſing either of theſe paper ſhelters, the plants are previouſly to be raiſed in hot-beds, under frames and lights, exactly at the time and manner, as directed for the hand-glaſs crops, and to be ridged out alſo at the ſame times and manner there mentioned; obſerving, that, in default of hand-glaſſes, theſe paper frames may be uſed as ſoon as the plants are ridged out; but in this caſe the ridging out ſhould not be performed till May: but the moſt ſucceſsful way is, when there are hand-glaſſes ſufficient, to place theſe glaſſes over the plants at firſt ridging out, as directed in the hand-glaſs culture, managing them in the ſame way in every reſpect, till the plants have filled the glaſſes with their runners; then remove the glaſſes away, and place over the paper frames.

When theſe ſhelters are placed over the plants, free air muſt be admitted in proportion to the temperature of the ſeaſon, either by opening the pannels leſs or more, according to the warmth of each day, or by tilting one ſide of the frames at bottom, &c. for the article of freſh air muſt not be omitted at all opportunities, particularly when the plants ſhew fruit, the air being not only neceſſary to ſtrengthen the plants, but alſo to aſſiſt in the impregnation of the fruit, for the reaſons explained in the early Cucumber work; and towards the end of June, when the ſeaſon is warm, the frames may be raiſed at bottom about four inches.

It is alſo neceſſary to defend the plants over the above ſhelters with mats every night till towards the middle of June; likewiſe, occaſionally, in all hard rains, day or night.

Theſe paper ſhelters never laſt but one ſeaſon, that is the paper; but as to the frames, they, with care, will continue uſeful ſeveral years, ſo muſt be freſh papered every ſpring, in proper time to be ready to place over the beds.

*Raiſing them in Bark Hot-beds.*

Having before advanced hints reſpecting the merit of tanner's bark hot-beds in the culture of Melons, obſerve, we propoſe them principally as fruiting beds; that is, previouſly raiſing the plants in dung hot-beds, as already directed, and then tranſplanting into the bark-beds.

With reſpect to the merit of theſe ſort of hot-beds for this purpoſe, it muſt be conſidered, that as the Melon plants are generally between three and four months from their firſt appearance till they produce ripe fruit, and they all the time require the conſtant aid of artificial heat, which, though they are fruited in great perfection in that of dung, i. e. dung hot beds, yet thoſe of tanner's bark being conſiderably of more durable and regular heat, the plants by that aid may ſtill be fruited to greater advantage, and with leſs trouble, becauſe, if made entirely of new tan, no lining, or but very little, will be neceſſary, nor is there ſuch danger to be apprehended from ſteaming or violent heat, as in dung hot-beds; but it muſt be remembered, that the purchaſe of the tan renders theſe kind of hot-beds more expenſive than dung, though, if both theſe materials are obliged to be purchaſed, and the tan can be obtained within a moderate diſtance, there is but an inconſiderable difference in the expence; for you cannot have a good cart-load of hot dung brought home for leſs than three ſhillings, and in ſome places five or ſix, or more, and you may have ſixty buſhels of tan, about as much as three horſes can draw, for three half crowns.

But, in caſe of ſcarcity of new tan for the above purpoſe, the waſte or caſt-off bark of the ſtoves, mixed with a quantity of new, might be uſed, provided, however, the old tan is not become quite earthy; ſo mixing one half old to one of new, which will form a moderately ſtrong and durable heat, and will anſwer for beds made not earlier than the middle of February, or beginning of March.

Or, for the latter crops, beds might be formed entirely of caſt-off bark, provided, as above obſerved, it is not become very earthy, and its fermenting property not quite exhauſted; which, if not, when freſh worked up, and formed again into a bed, will renew its heat, though in a moderate degree, therefore ſhould not be uſed for beds earlier than March and April, and which, if made in a pit formed of poſt and planking, ſo as to admit of a ſubſtantial lining of hot dung

to each ſide in ſix weeks or two months after making, would be an additional advantage to the plants.

Obſerve, that either the above mentioned bark-beds for the culture of Melons, muſt be made in ſome kind of pit, or frame, to confine the bark, which otherwiſe could not be formed into a bed, either in a bark-pit covered with glaſs lights, as exhibited in the article BARK-PIT; or, in default of ſuch a pit, one might be formed of poſt and planking, of width and length for one or more large three-light frames, and three feet and a half deep, to contain that ſubſtance of bark, and may either be ſunk half way in the ground, or not ſo much, according as the ſoil is dry or wet; but it would be moſt convenient to have it not ſunk more than a foot, for the advantage of adding a lining of hot dung to the ſides, if there ſhould be occaſion; I would, therefore obſerve, that a planked pit, for the culture of Melons, may be rather preferable to brick or ſtone, becauſe if you ſhall find it neceſſary to line the beds, by applying hot dung againſt the outſide of the planking, its heat will readily penetrate ſufficiently to recruit the declining heat of the bed; for as the Melons are to be planted in the full bed, and not in pots, as practiſed to pine-apple plants, there is no ſtirring up the bark to revive the heat as in ſtoves, and a lining may probably be neceſſary to thoſe beds, where caſt-off bark is uſed, or perhaps ſometimes one lining to thoſe beds made of new tan, may be of advantage, juſt when the fruit is ſetting and taking their firſt growth; on theſe conſiderations contrive the pit ſo as to admit of lining the ſides almoſt or quite to the bottom.

The time of year to begin the culture of Melons in theſe ſort of hot-beds, is the ſame as mentioned in dung hot-beds, and the plants ſhould be raiſed in a nurſery-bed as there directed; and when of the proper age and ſize, as there obſerved, tranſplant them into the bark-beds to remain to fruit.

Theſe fruiting-beds ſhould be made a fortnight or three weeks before-hand, to acquire a proper heat in due time for the reception of the plants from the nurſery hot bed, at their proper period of growth. Let the beds be made the full width and length of the pit allotted for them, and three feet at leaſt deep; but if caſt-off bark is uſed, three and a half depth in bark will be requiſite. As ſoon as made, cover the bed with the proper frames and glaſſes, to defend it from rains; and in about a fortnight it will be arrived to a proper temperature of heat; then earth it at top, as directed for the dung-beds, and the earth being warm, ſet two plants with their ball of earth entire, juſt under the middle of each light, give a little water, and manage them according to the former directions.

But if the bed is to be made moſtly of caſt-off bark, as it will be ſomewhat of a mouldering texture, and of but moderate heat, inſtead of earthing it as above obſerved, you may try the ſucceſs of planting intirely in the bark, without any earth at all. Let the bed be of the above mentioned dimenſions, and covered with the frames and lights, and in about three weeks it will be warm enough either to receive ſeed, or plants, firſt making holes in the middle of the bed, one immediately under the middle of each light, ſix or eight inches deep, and twelve or fifteen broad, fill them with rotten or finely pounded bark, forming each a little hollow, baſon-like, in which either ſow ſeed, and when the plants are a week or two old, thin them to two of the beſt in each hole, and there let them remain to fruit: or, to make the moſt of the bed, put in plants raiſed to a proper age, as in the dung hot-bed culture.

The plants being tranſplanted into either of the above bark hot-beds, obſerve the lights are to be kept conſtantly on, being careful to give the plants a proper ſhare of warm air at all opportunities, as the weather permits, according to the former rules.

It muſt be remarked, that the plants will not require much water in theſe hot-beds, as bark continues to ſupport a fine moiſt heat, of a very agreeable nature to the growth of moſt ſorts of plants, ſo that the Melons will be found to ſucceed with a very moderate ſupply of water, and the leſs the better, both for the continuance of the heat of the beds, as well as for the advantage of the plants and fruit.

Should you find the heat of the beds conſiderably declined when the fruit is ſetting, or taking its firſt growth, a good lining of hot dung againſt the outſides of the pit will be very beneficial.

*Saving the Seed.*

As to ſaving Melon ſeed, we need only farther obſerve here, that it ſhould be ſaved only from the very fineſt fruit of the reſpective varieties, and ſuch that has a firm and

highly flavoured fleſh; this ſhould be particularly obſerved when the fruit is ſerved at table, and the right ſeed properly reſerved in its own pulp, and ſent to the gardener; which, after lying in the pulp a few days, may be waſhed out, and all the heavy or good ſeed which ſink in the water are to be preſerved, dried, and put up for ſaving.

It will retain its germinative property ten or twelve years, but when from about three to five years old, is in its beſt perfection for uſe, for reaſons already given.

CUCURBITA, the Gourd and Pompion, and alſo the *Citrullus* or Water Melon.

The plants are herbaceous annuals, moſtly of trailing growth, extending from about five or ten, to forty or fifty feet in length, adorned with luxuriant ſimple foliage, and large monopetalous bell-ſhaped flowers, ſucceeded by enormous fruit, and are cultivated in our gardens, ſome by way of curioſity or variety, and ſome for the ſake of their fruit, particularly the Water-Melon. See CUCURBITA CITRULLUS.

Claſs and order, *Monoecia Syngeneſia.*

*Characters.*] CALIX, male and female flowers apart, having a monophyllous bell-ſhaped cup, terminated at the brim by five briſtles. COROLLA, is monopetalous, bell-ſhaped, five-parted, and adheres to the calix. STAMINA, in the males, three connivent filaments, and linear reptant antheræ. PISTILLUM, a large germen under the female corolla, a conical, trifid ſtyle, and a large trifid ſtigma. PERICARPIUM, a large fleſhy fruit of three membranaceous cells, and numerous compreſſed obtuſe ſeeds, in a double ſeries.

We ſhall firſt exhibit the Gourd and Pompion tribe under one head, and the Citrullus, or Water-Melon, in another. See CUCURBITA CITRULLUS.

Of the Gourd and Pompion kinds there are about five ſpecies, each of which admitting of ſeveral varieties in the form and ſize of their fruit; ſome aſſuming a long figure, obtaining from about two to five or ſix feet in length, and one or two round; others aſſume a round form, and as large as a half peck, or even a peck, or almoſt a half buſhel meaſure, and other various forms and magnitudes down to the ſize of an orange; and the plants grow ſo rapidly, that riſing from ſeed in ſpring, extend from about five or ten, to forty or fifty feet each way by Auguſt and September, at which times they perfect their fruit, and in October and November following they totally periſh; ſo that they are of but little more than ſix months duration. They are exotics of America, and other diſtant countries, but are hardy enough to grow here in the full ground, from May till October.

The ſpecies are,

[1]CUCURBITA *Lagenaria.*

*Bottle Gourd.*] Cucurbita with trailing, thick downy ſtalks, branching into many ſpreading runners, extending along the ground fifteen or twenty feet in length, large, roundiſh, heart-ſhaped, indented, woolly leaves, glandulous at the baſe, and large white flowers, ſucceeded by long incurvated whitiſh yellow fruit, obtaining from about two to five or ſix feet in length, and about nine to eighteen or twenty-four inches round, having a ligneous durable ſhell, that having the pulp ſcooped out, is uſed for holding water, &c. hence the name *Lagenaria* or Bottle-Gourd.

*Varities of this are*] Common long-fruited Bottle-Gourd——Long protuberant bellied Bottle-Gourd—Long ſickle-ſhaped Bottle-Gourd—Long taper Bottle-Gourd—Long turbinated Bottle-Gourd.—All theſe varieties if forwarded in ſpring in hot-beds, and planted out in May into the natural ground, or rather upon holes of hot-dung under hand glaſſes, to be ſheltered during the cold weather; the fruit will obtain a large growth, and ripen perfectly. Some of which have acquired ſuch a prodigious magnitude, as when ſcooped, the ſhell has contained twenty-two gallons of liquid; and in America, where they grow in great abundance, the ſhells are converted into many uſeful domeſtic utenſils. The fruit, while quite young and tender, is alſo very commonly uſed in both Indies as culinary diſhes, both to eat alone, and as ſauce to fleſh meat.

[2]CUCURBITA *Pepo.*

*Pepo or Pompion, commonly called Pumpkin.*] Cucurbita with trailing, ſtrong, rough ſtalks, branching into numerous runners, ſpreading along the ground, from about ten to forty or fifty feet each way, garniſhed with large, roundiſh, lobated, rough leaves, and yellow flowers, ſucceeded by large, round, ſmooth fruit, of different forms and ſizes in the varieties, ſome as big as a peck, or almoſt a half buſhel meaſure, others conſiderably leſs, and ſome not bigger than an orange, ripening to a yellow, and ſometimes a whitiſh colour, &c.

*Varieties*

*Varities of this are*] Common large round-fruited yellow Pompion--Oval yellow Pompion—Oblong yellow Pompion—Whitiſh fruited Pompion—Marbled Pompion—Small round Pompion—Orange ſhaped Pompion—Pear ſhaped Pompion--Turbinated Pompion--Spherical, or ſemi-globular Pompion—Egg ſhaped Pompion—Striped roundiſh Pompion—Striped egg ſhaped Pompionr—Striped turbinated Pompion.—Striped pear-ſhaped Pompion.

This ſpecies and varieties are the moſt hardy, as well as conſiderably the moſt extenſive in their growth, as a ſingle plant, if properly encouraged, is ſuppoſed will overſpread ten or fifteen rods of ground, and produce a great number of fruit; which, when young, is generally a mixture between a deep blue and pale white, but change as they encreaſe in volume. The plants are cultivated in England principally for curioſity, the fruit being rarely uſed; though in America, Aſia, and Africa, theſe, as well as the Gourd, make great part of the food of the poorer people during the hot months; and, if gathered when not much bigger than a hen or gooſe egg, boiled and properly ſeaſoned with butter, vinegar, &c. they eat tolerably palatable by way of ſauce to butcher's meat; they are alſo uſed in ſoups; but here in England they are ſeldom uſed till grown to maturity, when they make a hole on one ſide, and diveſt the pulp of all the ſeeds, then mix it with ſliced apples, milk, ſugar, ſome grated nutmeg, &c. and thus make a kind of pudding, prepared in the ſhell, and bake it in an oven, which is commonly called pumpkin pye, and for which purpoſe the plants are cultivated by the country people in many parts of England, who plant them upon old dung-hills, or compoſt heaps, or ſuch like places; for the ſeed, if not ſown till May, will grow in the open ground; however, to have them in more early perfection, it is beſt to forward them in a hot-bed in April, and plant them out in the middle of May. See their *Culture*.

3 CUCURBITA *Verrucoſa*.

*Warted Gourd*.] Cucurbita with trailing ſtalks, very branchy and ſpreading, running upon the ground ten or fifteen feet each way, large lobated leaves, and yellow flowers, ſucceeded by roundiſh, knobby-warted, white fruit, of different forms in the varities; and all of moderate ſize.

*Varieties are*.] Roundiſh Warted Gourd—Oblong Warted Gourd—Flat Warted Gourd—Bottle-ſhaped Warted Gourd—Orange-ſhaped Warted Gourd——Lemon Warted Gourd.

Theſe varities are alſo all uſed, while growing, as culinary, in many parts of America.

CUCURBITA *Melopepo*.

*Melopepo, or Erect Gourd, or Squaſh*.] Cucurbita with an erect ſtrong ſtalk ſeveral feet high, rarely ſending forth ſide runners, but becoming buſhy upward, adorned with large lobated leaves, and the flowers ſucceeded by depreſſed knotty fruit, both of white and yellow colours, and of different forms in the varities, but chiefly of a moderate growth.

*Varieties are*] Common broad flat Squaſh—Buckler-ſhaped Squaſh—Conical Squaſh—Citron-ſhaped Squaſh—Flat-ſided Squaſh—Turbinated Squaſh—White-ſtriped Squaſh—Yellow-ſtriped Squaſh.—All of which varieties grew with erect ſtalks; obſerving, however, that by ſaving the ſeed ſeveral years in the ſame ground, they are apt to vary, and aſſume a trailing growth, and put forth runners like the other ſpecies. The fruit when nearly half-grown, being boiled, is by ſome people eſteemed very delicate; but the Americans generally pluck it for uſe ſoon after the falling off the flower, or when the fruit is the ſize of a walnut, or at moſt not bigger than a hen's egg.

CUCURBITA *Lignoſus*.

*Ligneous-ſhelled Gourd, often called Calabaſh*.] Cucurbita, with trailing ſtalks, branching into runners, extending many feet each way, large, lobated, rough leaves, and yellow flowers, ſucceeded by roundiſh moderate ſized ſmooth fruit, of different forms in the varieties, and the ſhells become hard and woody.

*Varieties of this are*.] Roundiſh bottle-ſhaped ligneous Gourd, being almoſt the ſize and ſhape of quart bottles—Pear ſhaped fruit—Orange-ſhaped yellow fruit.

Among the varieties of the laſt four ſpecies, there are ſome whoſe fruit are of the ſize, ſhape, and colour of oranges, lemons, and pears, which appear extremely curious when growing. Theſe are commonly denominated —Smooth yellow Orange Gourd—Rock or carbuncled Orange Gourd—Stone-coloured Orange Gourd—Lemon Gourd—Rock Lemon Gourd—Yellow pear-ſhaped ſtriped Gourd—Pear-ſhaped white-ſtriped Gourd, &c.

But it muſt be obſerved, that the varieties of all the ſpecies of Cucurbita are amazingly variable in their fruit; that without particular care in cultivating them ſeparate, they ſeldom

continue the ſame longer than two or three years; for thoſe of each ſpecies vary leſs or more from ſeed, both in figure, ſize, and colour.

The plants in general have ſtrong, thick, ſucculent ſtalks; the leaves very large, elevated on long foot-ſtalks, ariſing alternate from the joints of the ſtalks and branches; and the flowers are male and female apart on the ſame plant, proceeding from the axillas of the leaves, and the germen of the female flowers becomes the fruit. See the *Characters*.

All theſe ſpecies of Gourds and Pompions, &c. and reſpective varieties, obtain eſtimation principally as plants of curioſity, for the ſingularity of their growth and fruit, and are often admitted in curious gardens, both as plants of variety and ornament; and as ſuch, if properly diſpoſed, will exhibit a ſingular appearance, raiſing them in a moderate hot-bed in April as hereafter directed, and tranſplanted into different parts towards the middle or latter end of May, allowing them an open ſunny ſituation; ſo that ſome may be diſpoſed in open vacant ſpaces contiguous to lawns and ſpacious walks, training ſome along upon the ſurface of the earth, according to their natural growth, others may be trained about tall ſtout ſtakes fixed ſecurely in the ground, and ſome may be conducted over buſhes, or up the ſtems of ſhrubs and trees, and their courſe directed among the extreme branches. They have likewiſe a fine effect when trained upon arbours of lattice work, or railing, which they will ſoon overſpread; and they alſo form a fine variety trained againſt a wall, paling, or any kind of fence; in all of which methods of training they will bear plentifully, but the fruit is the moſt conſpicuous and ornamental when the plants are trained upon ſome kind of ſupport, which is more particularly neceſſary to be practiſed in all thoſe ſorts denominated Gourds.

As the plants in general delight in a fat ſoil, they, when planted on old rotten dung-hills, generally make amazing progreſs, but more particularly the pompion kinds, where they will ſpread wonderfully, and produce abundance of fruit in its fulleſt perfection.

But the Bottle-Gourd, Warted-Gourd, Melopepo or Squaſh, and the Ligneous Gourd or Calabaſh, are commonly the moſt fruitful when trained upon ſome ſupport, and the fruit obtains the largeſt ſize, and more eſpecially the Bottle-Gourd.

As the fruit of theſe plants are but of little eſtimation in England for culinary uſes, our gardens furniſhing many other eſculent plants, roots, and fruits, of a more palatable flavour; a few plants of each ſort ſhould, therefore, only be cultivated, becauſe they require ſo much room to ſpread.

*Their Propagation, Culture, &c.*

All the ſpecies of Gourd and Pompions, and their reſpective varieties, are raiſed from ſeed ſowed annually in April and beginning of May, either by aid of artificial heat, or without; but the plants forwarded in a hot-bed till about a month old, come into fruit a month or ſix weeks earlier, and will ripen ſooner in proportion.

Therefore, the ſeed may either be ſown in a moderate hot-bed in April, half an inch deep; and when the plants have three or four leaves, tranſplant them in May or early in June into the open ground, or upon holes of hot dung, under hand-glaſſes, &c. which will forward the plants conſiderably.

Or for want of hot-beds, the ſeed may be ſown in the full ground in the firſt or ſecond week in May, but not ſooner. The *Cucurbita Pepo*, or Pompion, in particular, ſucceeds rather better than any of the ſorts by this method; the third, fourth, and fifth ſpecies will alſo ſometimes ſucceed tolerably in fine dry ſeaſons; but the firſt ſpecies, *Cucurbita Lagenaria*, rarely ever comes forward enough to produce any tolerable ſized fruit, unleſs forwarded at firſt by artificial warmth, and indeed all the other ſorts of Gourd arrive much ſooner to perfection, if brought forward at firſt in a hot-bed. However, in default of ſuch conveniences, the ſeeds may be ſown at the above mentioned times in the natural ground, where it is deſigned the plants ſhall remain to fruit, chuſing rich ground in a ſunny expoſure, which ſhould be well dug and formed into ſhallow holes, baſon-like, as for the pickling cucumbers, at conſiderable diſtances, ſowing three or four ſeeds, half an inch deep in each hole; but, if you have any hot dung to ſpare, it would be of much advantage, that in the places where you intend ſowing the ſeed, to dig holes two feet wide, and fifteen inches deep, fill them with the hot dung, and earth it over ſix or eight inches deep, ſo forming the earth hollow, put in the ſeed as above; then, in either method of ſowing, if there are any ſpare hand-glaſſes, it would alſo be of much

ſervice

ſervice to place one over each hole occaſionally in cold nights and bad weather, or for want of theſe, may cover on nights with large garden pots, &c. whereby the plants will come up ſooner, and continue a ſurer growth than if fully expoſed, obſerving to leave only one of the beſt plants in each hole, giving plenty of water in dry warm weather, and they will ſpread themſelves conſiderably in June and July, and produce ripe fruit in Auguſt and September.

But, as the principal merit of all theſe ſort of plants conſiſts in their fruit, both for uſe and ornament, therefore, to have them in fruit as early as poſſible in ſummer, I ſhould adviſe, where convenient, to ſow and forward the plants in a hot-bed; that is, ſow the ſeed in April in any of the cucumber or melon hot-beds, under glaſſes, &c. or, if ſown ſeparate in a moderate hot-bed under a ſmall frame, or hand or bell-glaſſes, or oiled paper lights, they may be more readily hardened by degrees to the full air; and when the plants raiſed in either method are come up a few days, and have expanded their ſeed-leaves, they ſhould be taken up and pricked down, either in the earth of the bed, about four inches diſtant, or rather in ſmall pots, one plant in each, ſo plunging them in the bed; being careful, if in a bed by themſelves, to admit a large portion of free air every mild day, to ſtrengthen and harden them gradually, preparatory to their tranſplantation into the full ground, which is to be effected in May or early in June, when the plants have three, four, or five leaves, previouſly digging the ground, and forming ſhallow holes a foot wide, in the allotted places, and tranſplant the plants with a ball of earth about their roots, one plant in each hole, giving directly ſome water; and, to the tender ſorts, the occaſional ſhelter of a hand-glaſs, &c. on nights during the cold weather, will prove beneficial to the plants; let them, however, at any rate, have occaſional ſhade the firſt week from the noon-day ſun.

As, however, the firſt ſpecies, *Cucurbita Lagenaria*, is rather more tender than the other ſorts, it would be highly proper in tranſplanting them, as above, where they are finally to remain, to indulge them ſtill with a farther aid of artificial heat, and occaſional ſhelter of glaſſes, otherwiſe they rarely come forward enough to produce fruit of any conſiderable ſize; therefore, in the allotted places dig holes two feet wide, and one and a half deep, filling each hole with hot dung, and earth them ſix or eight inches deep, put in the plants, and cover them with hand-glaſſes till their runners advance from under them, managing them nearly as directed for the hand-glaſs crop of cucumbers.

I would likewiſe obſerve, that as the Warted-Gourds, &c. are alſo rather of more tender quality than the Pompions, it is therefore alſo adviſeable, where there is hot dung and hand-glaſſes to ſpare, to treat them in their final tranſplantation as directed above for the *Cucurbita Lagenaria*, by which practice you will obtain them in fruit much earlier in the ſummer.

All the ſorts of theſe plants require a plentiful ſupply of water in dry weather, eſpecially after they have begun to run. Let them, therefore, be duly ſupplied in dry ſeaſons, and they will extend to a greater diſtance, and produce a great quantity of fruit.

When theſe fruit are deſigned to be uſed as culinary, for boiling, they ſhould be gathered when quite young, while the outſide tegument, or rind, is perfectly tender, they will then boil exceedingly ſoft, and have an agreeable flavour.

To ſave ſeed of theſe ſpecies, it muſt be taken from the ripe fruit in autumn; the fineſt and the moſt perfect ripened fruit of Auguſt and September ſhould be choſen, and the ſeeds diveſted of the pulp, as obſerved of the cucumbers and melons.

*Second Head.*

CUCURBITA-CITRULLUS, the Citrul, or Water-Melon, *(Citrullus.)*

The *Citrullus* is now retained as a ſpecies of *Cucurbita*, according to the Linnæan arrangement, which by Tournefort, Miller, and other former botaniſts, was conſidered as a diſtinct genus, under the title of *Anguria*; but its characters being proved the ſame as the *Cucurbita*, or Gourd, it is properly a ſpecies of that genus.

Claſs, order, and character, the ſame as the *Cucurbita*.

There is but one ſpecies, viz.

CUCURBITA *Citrullus.*

*Citrul, or Water-Melon.*] Cucurbita, with trailing ſlender ſtalks, branching into many runners, extending ſix or eight feet every way, ornamented with large leaves divided into many parts; and yellow male and female flowers apart, the females ſucceeded by large round ſmooth fruit, replete with a watery cooling

cooling juice; hence denominated Water-Melon.

*Varieties of this are*] Large round red-fleſhed Water-Melon—Large round white-fleſhed Water Melon—Large oblong Water-Melon—Small round Water-Melon, &c.

The large varieties of this fruit obtains a monſtrous volume, frequently growing as large as half peck and peck meaſures; but theſe very large kinds rarely ripen in any degree of perfection in England; the moſt proper ſorts, therefore, for Engliſh culture, are the ſmall round kinds, which will ripen freely, and acquire a rich flavour, and of which there are both red and white fleſhed kinds.

The plants are tender herbaceous annuals from the hot parts of the world, and nearly of the temperature of the *Cucumis Melo*, or Muſk-Melon, and, like them requiring the aid of artificial heat and ſhelter, to bring the fruit to perfection in this country.

Their ſeaſon of ripening in England is Auguſt and September

Theſe fruits by their cooling and diuretic quality are ſo very beneficial in hot climates, that they are greatly cultivated in Portugal, Spain, and the Levant; alſo in Perſia and Egypt, and other parts of Aſia and Africa, and the warm parts of America; in all of which countries they grow freely in the open ground, and ripen in the greateſt perfection.

In England, however, notwithſtanding our aids of artificial heat and ſhelter, this fruit, on account of its watery quality, and ſometimes for want of proper culture, according to its nature, is often ripened but indifferently, which is the cauſe of its not being in general eſteem. But by aid of ſubſtantial hot-beds, under conſtant ſhelter of frames and glaſſes, and the beds ſupported in a conſtant good heat, the fruit may be ripened in full perfection; which, if effected in due time in autumn, whilſt the warm weather continues to give it flavour, it is very delicious eating, and is accounted exceeding wholeſome.

### *Propagation and Culture.*

The propagation and culture of all the varieties of Citrullus is nearly the ſame; as for the muſk-melon, they are raiſed annually from ſeed ſown in hot-beds, under frames and glaſſes in February or beginning of March, as for the muſk-melons, and when the plants have come up a few days, prick them in pots (thirty-twos) two plants in each, plunging them in the bed, obſerving to ſtop the plants alſo at the firſt joint; and when they begin to ſhoot runners, tranſplant them into a large hot-bed, alſo under frames and lights, where they are to remain to fruit.

As theſe plants are nearly of the ſame temperature, and nature of growth as the cucumber and muſk-melon, the ſame degree of hot-beds, method of ſowing, raiſing, and nurſing the plants, is here to be obſerved; and their whole management, in reſpect to giving air, covering the glaſſes on nights, giving water, and ſupporting the heat by linings, &c. is alſo exactly the ſame. The ridging out the plants into the fruiting hot-beds is alſo the ſame as the muſk-melon, obſerving to make the hot-beds ſubſtantial, for one or more of the largeſt three-light frames; for, as the plants ſpread conſiderably, ſhould have as much room as poſſible; earth the bed twelve or fifteen inches thick in hillocks; but as one hole of plants is ſufficient for each, a three-light frame, therefore, lay only one hillock of earth juſt under the middlemoſt light, earthing the other parts only about three inches thick at preſent, ſo when the earth is warm, put in one pot of two plants in each hill of earth; though one plant, if it thrives, will ſufficiently fill the frame, for they ſpread at a great rate, and unleſs they have full ſcope, they will make little progreſs in fruiting.

When they are thus ridged out, obſerve that as the glaſſes muſt be continued conſtantly on the frames, do not omit giving air at all opportunities, agreeable to the rules exhibited in the cucumber and melon ſame culture; likewiſe cover the glaſſes every night with mats as for them directed; give alſo frequent moderate waterings, and earth the bed gradually to the depth of the hillock on which the plants ſtand, and conduct the vine and runners in proper directions, ſo as to fill all the places within the frame. The heat of the bed muſt alſo be ſupported with great attention, by proper linings of hot dung; obſerve this all along, to forward the plants as much as poſſible, and it is particularly neceſſary, when the plants begin to ſhew fruit, and whilſt it is taking its firſt growth, until almoſt as big as a man's double-fiſt, for without a conſtant bottom heat till that period, it will be impoſſible to bring this kind of Melon forward enough to ripen in good perfection in England; therefore, let it be a rule to maintain a conſtant heat in the bed, as above,

above, and continue the conſtant ſhelter of the glaſſes, tilting them all fine days, to allow a proportionable ſhare of air; and in ſcorching ſunny weather, a ſlight ſhade of a mat, or a little looſe hay, for two or three hours in the middle of the day will be neceſſary, together with a moderate portion of water once a week or fortnight; and with this culture, the fruit will readily attain perfection in any part of Britain, and before it is late in autumn; for unleſs they ripen in Auguſt and September, they will be devoid of flavour.

The aid of bark hot-beds would be very beneficial in the culture of this ſpecies, as we formerly obſerved in the muſk-melon culture.

It muſt be remarked, that theſe plants can never be fruited in any degree of perfection under hand or bell-glaſſes, &c. as practicable for the latter crops of muſk-melons.

With reſpect to the tokens of ripeneſs of theſe fruits, it muſt be remarked, that they ſeldom impart that very fragrant ſmell peculiar to muſk-melons, nor, like them, do they often crack or recede from the foot-ſtalks; but they ſometimes change a little yellowiſh, and the top becomes ſoft or pliable to the touch, and by ſmelling cloſe to that part, they ſometimes alſo diſcover their maturity by the emiſſion of a little fragrance.

The ſaving ſeed of this ſpecies is, as obſerved of the Muſk-Melons, to be effected always from the fineſt and moſt perfectly ripened fruit, treating it in the ſame manner.

CULINARY Plants. Plants or herbs that are uſed in the kitchen for boiling, ſtewing, or any other culinary purpoſe in cookery.

CUPRESSUS, the Cypreſs Tree.

This genera conſiſts of hardy evergreen and decidious trees, of beautiful pyramidal growth, and are proper both as timber trees, and for ornamental plantations, being very pictureſque in their general habit, extending their branches regularly all around from top to bottom of the ſtem, cloſely decorated with ſmall narrow thick leaves, and amentaceous male, and conous female flowers, ſucceeded by round ſcaly fruit, called cones. See CONUS.

Claſs and order, *Monoecia Monadelphia.*

*Characters.*] CALIX, male and female flowers apart on the ſame plant; the males an oval katkin, and the females a roundiſh cone, each of ſeveral ſcales, and each ſcale ſerving as a calix to one fructification. COROLLA, no petals; STAMINA, no filaments, but four anthoræ at the bottom of each ſcale. PISTILLUM, a ſcarcely viſible germen, and very ſhort ſtyle. PERICARPIUM none, the ſeed being involved only by the tough ſcales of the calix, forming a roundiſh cone.

There are about three diſtinct ſpecies of theſe trees common to the Britiſh gardens, two evergreens and one deciduous; and one of the former admits of three beautiful varieties, differing in ſtature and habit of growth.

The ſpecies are,

CUPRESSUS *Sempervirens.*

'*Evergreen Common Cypreſs.*] Cupreſſus, with an upright ſtrait ſtem, cloſely branching all around almoſt from the bottom upwards, into numerous quadrangular branches; obtaining, in the different varieties, from about fifteen or twenty, to forty or fifty feet ſtature, and very cloſely garniſhed with very ſmall, narrow, erect evergreen leaves in imbricatum, and flowers and fruit from the ſides of the branches.

*Varities of this are,*

*Evergreen common upright Cypreſs*—ariſing from about fifteen to twenty feet high, and with all its branches aſſuming an upright direction, often growing in a cloſe pyramidal form.

*Evergreen horizontal ſpreading Cypreſs*—— ariſing thirty or forty feet high, and with all the branches ſpreading widely in a horizontal direction.

*Evergreen ſmall-fruited Portugal Cypreſs, often called Cedar of Goa*—obtaining near twenty feet ſtature, having all its branches ſpreading irregularly in a ſomewhat horizontal poſition, frequently bending downwards, and the leaves ending in ſpines.

All theſe varieties of *Cupreſſus Sempervirens* are inhabitants of the Levant, and grow in great abundance in Spain and Portugal, alſo in the iſland Crete, or Candia, where there are vaſt plantations of them, and are uſed as their moſt common timber, more particularly the horizontal kind, as being the largeſt grower, the timber of which is ſuppoſed to be of many hundred years duration in any kind of buildings, for it is ſaid to reſiſt the worm, moth, and all putrefaction. The trees in general are alſo beautiful, in their growing ſtate, and ſo hardy that they proſper here in almoſt any ſoil, but are obſerved to be particularly thriving in any gravelly or ſandy ground, and may be employed to great advantage in ornamental plantations for the embelliſhing gardens

dens and parks. The firſt of theſe varieties was long the moſt common in England, and on account of its erect cloſe pyramidal growth, was formerly trained into regular figures, by ſhearing it annually in ſummer.

[2]CUPRESSUS *Thyoides.*

*Thyoides, or Evergreen arbor-vitæ-leafed American Cyprus, ſometimes called White Cedar.*] Cupreſſus, with an upright ſtem, branching out regularly into numerous ancipal, or two-edged branches, and ariſes twenty or thirty feet high, ornamented with flat evergreen leaves, imbricated like arbor vitæ, and ſmall blue cones the ſize of juniper-berries.

CUPRESSUS *Diſticha.*

*Diſtichous-leafed American Deciduous Cypreſs.*] Cupreſſus, with an erect trunk, attaining a large bulk, branching wide and regular, and grows fifty or ſixty feet high, fully garniſhed with ſmall ſpreading deciduous leaves, arranged diſtichous, or along two ſides of the branches. And, conſidered as a deciduous tree, makes a moſt beautiful appearance in ſummer.

The flowers of all theſe trees ariſe principally from the ſides of the branches, but they make but little appearance, and the fruit is univerſally ſmalliſh, cloſe, round cones, which, on large trees, ſometimes ripen in England, though not always furniſhed with good ſeeds, ſo they are commonly procured from abroad for ſowing.

All theſe trees being beautiful in their general growth, and very ornamental in their ſmall, but cloſely placed foliage, are moſt proper to be employed in all ornamental plantations, and have a fine appearance either thinly grouped with other trees, on the ſides of ſpacious lawns, or to border grand plantations; likewiſe to aſſiſt in forming detached clumps, or to be ſtationed here and there as ſingle objects, or in ſmall groups by themſelves, of from two to five of different ſorts, in extenſive lawns, parks, and other graſs ground; they are alſo choice furniture to be employed in aſſemblage in forming rural avenues, and grand rural walks, and the evergreen kinds, by their pyramidal form, are peculiarly adapted for embelliſhing the grounds contiguous to ornamental garden buildings, temples, and other ſacred ſtructures, in any part of pleaſure grounds; and ſingle trees placed in large breaks or opens, in the excurſions of ſpacious ſerpentine walks are very ornamental.

As ſome of the ſorts acquire a conſiderable ſtature and bulk, and arrive to timber, they may alſo be introduced among foreſt trees, in the moſt conſpicuous parts of eſtates, to the emolument of the owner, as well as to improve the beauty and elegance of his plantations.

The ſeaſon for planting, or tranſplanting theſe trees is the ſame as for other hardy evergreens, and thoſe of the deciduous tribe. See EVERGREEN and DECIDUOUS TREES.

In their culture it is adviſeable to ſuffer them all to retain their natural growth, in which they will exhibit the more picturesque appearance.

*Propagation of all the ſorts.*

They are all raiſed abundantly by ſeeds; they will alſo ſometimes grow by cuttings of the young ſhoots, but the ſeedlings make the handſomeſt plants.

The ſeeds are procured in their cones from the ſeeds-men, and by expoſing them to a moderate heat, they readily open and diſcharge the ſeeds freely. The ſeaſon for ſowing them is any time in March, and they grow freely on a bed, or border of common light earth, eſpecially the firſt and third ſpecies. Let the ground be then dug, well broken, and raked ſmooth, then drawing an inch of earth evenly from off the ſurface into the alley, ſow the ſeeds moderately thick, and directly ſift the earth over them, half an inch deep. The ſeed being thus ſown, obſerve, that, if in April and May the weather proves warm and dry, a very moderate watering will be now and then neceſſary, and the plants will riſe in ſix or eight weeks; obſerving then, and during ſummer, to keep them clear from weeds, and in dry weather give them gentle waterings twice a week. In winter indulge them with occaſional ſhelter of mats in time of hard froſt. Thus continue your care till the ſecond ſpring after they come up, when they will be two years old; then in March or April tranſplant them from the ſeed-bed into a ſheltered ſituation, in nurſery rows two feet aſunder: and in three or four years they will be fit for the ſhrubbery, &c.

But if the ſeeds of theſe trees were ſown in pots, tubs, or boxes, and plunged in a moderate hot-bed, under occaſional ſhelter of mats, the plants will come up near a month ſooner than thoſe in the full ground; and they may be pricked out the following ſpring into the nurſery.

As

As the *Cupreſſus Thyoides*, however, is ſometimes a year after ſowing before the plants come up, it may therefore be proper to ſow the ſeeds in boxes, pots, or tubs, for the conveniency of removing them to the ſhade, to have only the morning ſun during ſummer, and to a ſheltered ſunny ſituation in winter; and if the plants ſhould not appear the firſt year, it would be of great advantage, in ſpring following, to plunge them in a hot-bed, as above obſerved; it will greatly forward the plants, ſo as to be fit to tranſplant the ſpring following.

*Propagation by Cuttinge.*

This may be tried upon all the ſorts, tho' as to the evergreen kinds, it is often two years before they are properly rooted. Chuſe the young ſhoots, plant them in October, in a ſheltered ſituation, and give plenty of water the following ſummer. But the plants raiſed from cuttings will not obtain more than half the ſtature of thoſe raiſed from ſeeds.

CUTTINGS. In gardening, Cuttings are a part of the branches of plants and trees, cut off and planted for the purpoſe of propagation.

Vaſt numbers of trees and plants may be increaſed by Cuttings; for, as a branch, or even the ſmalleſt twig of one, may be conſidered as a part ſimilar to the whole plant, and that when ſeparated, or cut from its parent, is devoid of a root, yet, being planted in earth, it in proceſs of vegetation forms one, as well as advances with a ſtem furniſhed with branches, and exhibits leaves, flowers, and fruit, exactly the ſame as the mother-plant, without the leaſt variation.

Some ſorts of plants are alſo propagated by Cuttings of their leaves, as in ſome ſorts of *agave* and *aloe*.

Numbers of trees grow ſo readily by cuttings, that it is the only expeditious method for raiſing them; as for example, the willow, poplar, and alder, which will grow either by ſmall Cuttings, of ſix inches or a foot long, or by large truncheons, a yard or more in length, and as thick as a man's wriſt. And of the willow, Cuttings of the large branches, two or three yards long, and two or three inches thick, planted in moiſt places, will readily grow.

But the proper parts of moſt other trees, ſhrubs, and herbaceous plants for cuttings, are principally the young ſhoots of one, or at moſt two years growth, though moſt trees and other plants ſucceed beſt by the one year's Cuttings, and planted in the autumn or ſpring after they are produced; and ſome ſorts of hard wooded plants ſucceed beſt by planting the ſame year's ſhoots in ſummer, as is obſerved under their reſpective articles.

The proper lengths to take off the ſhoots, as Cuttings, are various, from about three or four to twelve, fifteen, or eighteen inches long, according to the nature of the plant, length, ſize, and ſtrength of the ſhoots, of the reſpective ſorts; all of which is explained in the culture of all the different kinds that are propagated by this method, each under its reſpective genus.

In chuſing the Cuttings, always prefer ſhoots of the moſt robuſt growth, according to their nature, to the long, rambling, weakly ſhoots: prefer alſo thoſe that are freeſt from ſide ſhoots; and in taking off the Cuttings, that, if they are of the ſmaller, ligneous, ſhrubby plants, ſuch as the wall-flower, ſouthernwood, ſage, and the like, they may be ſlipped off with the hand from the ſide of the branch, though theſe are more properly ſlips than Cuttings. See SLIPS. And many of the ſmaller ſorts of ſhrubs, both deciduous and evergreens, may be taken off in the ſame manner; but thoſe of the ſtrong-ſhooting ſhrubs and trees, and all ſucculent plants, ſhould always be cut off, either from the ſide of a branch, or from the end of one, or the end of a former year's ſhoot, as is convenient. In taking off cuttings, it is often recommended to cut them with an inch or two of the former year's wood adhering to their bottom, particularly the vine, laurel, and ſeveral others, which may be practiſed where convenient; but moſt ſhoots that will grow by cuttings, ſucceed equally well without any of the old wood.

In preparing Cuttings previous to planting, trim off all ſide ſhoots; and all thoſe which have weak, tender, crooked, or ſtraggling tops, as often occur in many of the deciduous tribe, ſhould be topped, or ſhortened down to the firm ſtraight wood; though thoſe that have ſtraight robuſt tops, according to their nature, may remain entire, particularly the evergreen kinds, and never top any Cuttings of ſucculent plants.

Many ſorts of trees and ſhrubs that propagate by Cuttings, make very long one year's ſhoots, often long enough to admit of dividing into ſeveral lengths for cuttings of ten or fifteen inches each, as in the vine, honeyſuckle, jaſmine, paſſion-flower, with many other

deciduous climbers, and other trees; but I would obſerve, that the bottom part of theſe ſhoots that are firm and well ripened, cut off from about eight or ten to fifteen inches long, are the moſt eligible for Cuttings; though the upper parts, if they have ripened to a tolerably firm texture, may, in caſes of ſcarcity, be alſo uſed in lengths as above, rejecting the weak ſtraggling part toward the upper end; but the lowermoſt Cuttings generally make the beſt plants.

All Cuttings of trees, ſhrubs, and plants, that are not ſucculent, ſhould be planted as ſoon as poſſible after cut from the parent plant. But as to ſucculent Cuttings, they being moſtly very replete with moiſture, that when ſeparated from the parent, the moiſture continues to iſſue abundantly, often for ſeveral days at the cut part made in ſeparation, therefore, until that part is dried and cruſted over, it is not proper to plant them, otherwiſe the moiſture flowing out, would cauſe them to rot in the earth.

With reſpect to the mode of planting, moſt Cuttings of trees, ſhrubs, and all other plants, not ſucculents, ſhould be planted nearly two parts in three in the ground; but ſucculents ſhould be only juſt put as far into the earth as to make them ſtand, and is ſufficient to root; for if planted too low they are apt to rot, nor will they emit roots freely.

Some ſorts of Cuttings grow freely in the common open ground; others require a ſhady ſituation, and ſome to be potted for occaſional ſhelter; and others require the aid of a hot-bed, to promote their rooting, all of which is alſo fully exhibited accordingly, as the reſpective plants require, each under its proper genera.

Moſt ſorts of Cuttings will be ſufficiently rooted in one year, and ſome in one or two months, eſpecially thoſe ſorts planted in hot-beds, and even ſometimes in the full ground, when planted in the young wood in ſummer.

As to the ſeaſon for planting cuttings, ſpring and autumn is the time for moſt ſorts of trees and ſhrubs; and for herbaceous plants, ſuch in particular as grow by Cuttings of their flower-ſtalks, as the ſcarlet lychnis, lychnidea, &c. and ſuch as grow by young ſhoots from the bottom, as the carnation and pink, and thoſe ligneous-herbaceous plants that grow by young ſhoots from the ſides of the branches, as ſage, rue, roſemary, wall-flower, often ſucced beſt in ſummer, as ſoon as their ſhoots are of due ſize, in May or June, as is directed for each ſort in its proper place; but moſt ſucculents in particular ſucceed beſt by planting their Cuttings in ſummer, from about the middle of May till Auguſt, and they will be well rooted before winter.

All varieties of particular ſpecies of all ſorts of trees that grow by Cuttings, may, by that method of propagation, be continued diſtinct, the ſame as by grafting, budding, and laying; for the plant raiſed from a Cutting will be exactly the ſame as the parent, and can never vary like ſeedling varieties. See VARIETIES.

As there are numerous ſorts of trees and ſhrubs, both deciduous and evergreen, as well as many ſucculent and herbaceous plants, which grow by Cuttings, they will be particularly mentioned in their reſpective places in their proper genus, and the particular method of managing each kind, in reſpect to their propagation by Cuttings, fully explained.

**CYCLAMEN**, Sow-bread, but commonly called *Cyclamen*.

This genus conſiſts of many low, herbaceous, flowery perennials, of the tuberous-rooted tribe, conſiſting of a large, roundiſh, fleſhy root, crowned by numerous, angular, and heart-ſhaped, ſpotted, marbled leaves, and many fleſhy foot-ſtalks, ſix inches high, ſurmounted by monopetalous, five-parted, reflexed flowers.

Claſs and order, *Pentandria Monogynia*.

*Characters.*] CALIX is roundiſh, five-parted, and permanent. COROLLA is monopetalous, with a globular tube, the limb or upper part large, and divided into five ſpear-ſhaped reflexed ſegments. STAMINA, five filaments and ſtraight acute antheræ. PISTILLUM, a roundiſh germen, ſiliforme ſtyle, and acute ſtigma. PERICARPIUM, a globular unilocular berry, opening in five parts at top, and many oval angular ſeeds.

Modern botaniſts allow of but two ſpecies, one of which however admits of many beautiful varieties, and is the ſort principally known in our gardens.

The ſpecies is,

CYCLAMEN *Europæum*.

*European Cyclamen.*] Cyclamen, with a large orbicular or compreſſed fleſhy root, crowned by many angular and heart-ſhaped leaves, elevated about ſix inches on their own foot-ſtalks; and between them many fleſhy

fleſhy flower-ſtalks, of ſix or eight inches ſtature, terminated by reflexed flowers of different colours in the varieties, appearing in autumn, winter, and ſpring, ſucceeded by ripe ſeeds in June, July, and Auguſt.

Of this ſpecies are many varieties, all of the ſame habit of growth, ſize, and mode of flowering, only differing in the colours of the flowers, and time of appearing, and may be divided into three claſſes, the autumn, winter, and ſpring flowering, viz.

*Cyclamen Autumnale, or Autumnal Flowering.*

Common ivy-leaved autumnal white-flowered Cyclamen—ivy-leafed, autumnal, purple-flowered Cyclamen; both of theſe varieties having angular heart-ſhaped leaves, and which are generally marked with black in the middle, and the plants are very hardy —Round, heart-leaved, autumnal, purple Cyclamen; having large orbicular leaves, heart formed at the baſe, purpliſh underneath, and purple flowers with crimſon bottoms, and the plants are rather impatient of ſevere froſt, requiring either to be placed cloſe under a warm wall, or in pots, to move to occaſional ſhelter in winter. Of theſe varieties the two firſt are the hardieſt and the moſt common in the Engliſh gardens; all of them flowering in Auguſt, September, and October; the leaves riſing about the ſame time, and continue until May, then wither, and the ſeed bud lying cloſe to the ground all winter, ripens in June.

*Cyclamen Hyamale, or Winter Flowering.*

Orbicular, plane-leafed, Winter Cyclamen, with bright purple flowers—Angular-leafed, fleſh-coloured, Winter Cyclamen——white-flowered Winter Cyclamen.—All of which varieties flower towards Chriſtmas, continuing ſix weeks; and the leaves appearing at the ſame time, continue till ſummer, then decay, and the ſeeds ripen in July; the plants being rather a little tender, ſhould be planted on a warm border, and ſheltered from froſt, or ſome may be potted, to move to occaſional ſhelter.

*Cyclamen Vernum, or Spring Flowering.*

Heart leafed white Spring Cyclamen, having the upper ſide of the leaves veined and marbled with white, and white flowers with bright-purple bottoms—Angular, heart-leafed, purple, Spring Cyclamen, having the leaves veined and marbled with white, and purple flowers with crimſon bottoms—With marbled leaves and red flowers——Marbled leaves and entire white ſweet-ſcented flowers —With yellow flowers, but rare;——all of which varieties flower in March, April, and May, being furniſhed with leaves at the ſame time, which continue till the beginning of June, then decay, and the ſeeds ripen in Auguſt. This claſs of varieties are more tender than the two former; they, however, will often ſucceed planted cloſe under a warm wall, but it is alſo proper to have ſome in pots, to move to ſhelter of a green-houſe in winter.

The roots of all theſe plants are large, compreſſed, fleſhy lumps, emitting fibres at their baſe. The flowers and leaves of all the varieties ariſe immediately from the root, on their own proper foot-ſtalks, about from four to ſix or ſeven inches high, one flower generally crowns each ſtalk, each divided into five ſegments, reflexed backwards; and when the flowers fade, their ſtalks ſhrink ſpirally to the ground and envelope the ſeed-bud, and ſit cloſe to the earth among the leaves, increaſing to a large, round, baccaceous fruit; or ſeed-veſſel, ripening, as before obſerved, in June, July, or Auguſt.

All the varieties, though of humble ſtature, are very ornamental, both in their variegated large foliage, and their beautiful flowers, ſome of which are very fragrant; eſpecially of the vernal kind, which are alſo commonly the moſt beautiful; but all the ſorts merit admiſſion in every curious collection.

The two firſt autumnal varieties may be planted in any of the common borders; but all the other ſorts ſhould either be ſtationed cloſe under a warm wall, and ſheltered with mats, &c. in hard froſt, or potted and placed in a frame or green-houſe for the winter. They ſhould all have a dry light ſoil, otherwiſe the root is apt to rot by wet.

As the leaves of all the ſorts decay in May and June, that is the only proper period for removing the plants either for increaſe by dividing the root, or to plant them into freſh prepared earth, or to tranſplant them from one place to another, &c. but as the roots do not loſe their fibres, they ſhould not be often removed.

*Propagation, &c.*

All the ſorts are propagated by ſeeds, and the particular varieties by dividing their roots.

By ſeeds.—They grow freely in common earth, but it will be three, and ſometimes four or five years before ſome of the ſeedlings

will produce flowers; there is, however, this conſolation, that the flowers will be large and fine, and often ſome new varieties. Let the ſeeds therefore be ſowed ſoon after they are ripe, at leaſt, in Auguſt or September, in boxes, tubs, or large wide pots of rich light earth, and cover it half an inch deep; ſo place them to have only the morning ſun till October, then placed in a warm ſunny expoſure, and at the approach of bad weather remove them under a hot-bed frame, to have occaſional ſhelter of the lights, but expoſe them fully every mild day. By this care ſome of hardieſt ſorts will probably appear towards Chriſtmas, or before, but all of them in ſpring, obſerving in warm dry weather to give moderate waterings till their green leaves decay in ſummer; at which time place them to have only the morning ſun, as before, till October; then ſift half an inch of freſh earth over the ſurface, continuing to defend them from froſt in winter; and in ſummer following, when their leaves fade, tranſplant them where they are to remain, ſome in the full ground, and ſome of the tender kinds in pots, and in a year or two after ſome of them will begin to flower.

Bydividing the roots—They make but ſmall progreſs of increaſe by the root; however, the root may be divided by cutting it into two or three pieces, which muſt be done in ſummer, planting them again directly, and they will each flower at its reſpective ſeaſon.

CYDONIA, the Quince Tree. See PYRUS.

CYNARA, Artichoke and Cardoon.

Of this genus are two eminent ſpecies for the kitchen garden, the Artichoke and Cardoon, both hardy herbaceous plants; the former perennial, and the latter rather biennial, in England.

Claſs and order, *Syngeneſia Polygamia Æqualis.*

*Characters.*] CALIX, compound flower, having a ventricoſe general calix, compoſed of numerous broad ſcales. COROLLA, numerous, tubular, hermaphrodite florets, each five parted at top. STAMINA, five capillary filaments, and cylindrical antheræ indented in five parts. PISTILLUM, an oval germen to each floret, ſlender ſtyle, and oblong emarginated ſtigma. PERICARPIUM, none.—SEMEN, a four-cornered ſeed, crowned with down, ſucceeds each floret.

Of the garden Artichoke there is but one real ſpecies, and of the Cardoon the ſame; but of the Artichoke there are two celebrated varieties.

The ſpecies of Artichoke is,

'CYNARA *Scolymus.*

*The Garden Artichoke,* formerly *Scolymus* ] Cynara, with large thick perennial roots, crowned by a conſiderable cluſter of large pennatifid erect leaves, two or three feet long, and in the midſt upright ſtalks a yard high, ſurmounted by a large, round, ſcaly head, being compoſed of numerous, oval, calycinal ſcales, encloſing the florets, ſitting on a broad, fleſhy receptacle, which, as well as the fleſhy baſe of the ſcales, is the only eatable parts of the plant.

*Varieties of this are,*

*Conical-headed green French Artichoke*—— having the folioles of the leaves commonly terminated by ſmall ſpines, a tall ſtalk, the head ſomewhat conical, and of a light green colour, and with the ſcales pointed at top, opening and turning outward.

*Globular-headed red Dutch Artichoke*—having leaves without ſpines, a ſtrong ſtalk, the head large, globular, a little compreſſed at top, and of a reddiſh-green colour, broad obtuſe ſcales emarginated at top, growing cloſe, and turn inward.

Of theſe two varieties the globular-headed kind is deſervedly in moſt eſteem, being conſiderably larger than the conical-headed Artichoke; and its eatable parts, both of the bottom and ſcales, are conſiderably more thick and fleſhy, as well as more agreeably flavoured, and ſhould therefore be principally cultivated both for family and market.

Both the varieties are perennial in root; but the leaves and fruit-ſtem die to the ground in winter, and their roots remaining, ſend up new leaves, and a ſupply of Artichokes every ſummer, for ten or twenty years, if required. The conical green headed ſort is rather the hardieſt to reſiſt the power of ſevere froſt.

The flowers and ſeed of all the plants of this genus are produced in the centre of the head, the ſcales of which are the proper calix of the flower, which conſiſts of numerous ſmall bluiſh florets, ſucceeded by downy ſeeds, ſitting naked on the receptacle.

*The Culture; and firſt of their Propagation, and Method of planting.*

Both the varieties of Artichoke are propagated always by ſlips or ſuckers, ariſing annually from the ſtool or root of the old plants in

in ſpring, which are to be taken from good plants of any preſent plantation, in March or beginning of April, and planted in the open quarter of the kitchen-garden, in rows five feet aſunder, all as hereafter directed, and they will produce Artichokes the ſame year in autumn, the ſame plants enduring many years, and produce a freſh crop annually in ſummer.

It however ſhould be remarked, that although Artichokes are of many years duration, yet, their annual produce of fruit will, after the third or fourth year, be every ſeaſon ſmaller, and leſs fleſhy in the eatable parts; ſo that a freſh plantation ſhould be made every three or four years: but, in order to obtain a longer ſucceſſion of heads during each ſeaſon, I ſhould adviſe to make a freſh plantation annually, whereby you will have a regular ſupply of fruit ſeveral months, i. e. from June till November; for the old plants of one or more year's ſtanding produce their heads in June and July, and are moſtly over by Auguſt; at which time, the young plantation of the ſame year takes place, producing fine large heads, continuing to come in gradually till November: therefore, by planting a few every ſpring, that beſides the long ſucceſſion of fruit, you have always a crop ready to ſucceed the old ones, when you ſhall think proper to eradicate them; which, when intended, may be done in autumn, after they have yielded their ſummer crop; at which time, obſerving, that if you ſhall have occaſion for many young plants as ſoon as poſſible in ſpring, ſome of the beſt of theſe old ſtools may, in October or November, be trenched in cloſe together, in ſome dry warm place, under a hedge, or any fence open to the full ſun, raiſing the earth up about the young ſhoots; and in winter, when hard froſts prevail, cover with long dung litter, and thereby you will have a chance of obtaining good plants for a new plantation, if the ſeverity of the winter ſhould deſtroy or much injure thoſe in the open quarter; and even at any rate, they will furniſh young plants ſooner by a fortnight or a month, than the ſtanding crops in an open expoſure, eſpecially if the winter has proved ſevere; ſo after having ſlipped off the beſt young ſhoots for planting, eradicate the old roots entirely.

The ſlips, ſuckers, or young plants, either of any ſtanding plantation, or of the old roots above-mentioned, are generally to be taken off for planting in March, and ſometimes in very backward ſeaſons, or after hard winters, it will be the beginning or middle of April, before they are large enough for that purpoſe, which ſhould be from about eight or ten inches to a foot long. For the method of ſlipping or taking them off for planting, ſee the method *Of their Spring Dreſſing*.

With reſpect to ſituation and ſoil for theſe plants, they ſhould have a free expoſure; the more diſtant from ſpreading trees the better, which would draw them up weak; and as to ſoil, they proſper in any common ſoil of a kitchen-garden, capable of producing tolerable crops of other eſculent plants, though they are the moſt proſperous in a ſomewhat moiſt ſoil; but, if poſſible, avoid planting them in wet ground, as in ſuch the plants would be in danger of rotting, or ſubject to great injury in winter; and having fixed on the ground, lay thereon a conſiderable coat of rotten dung, ſpreading it equally over every part; then trench the ground one good ſpade deep, beſides the top paring or ſhovelling, and each trench two ſpades wide, as you proceed, bury the dung equally in the bottom of the trenches.

The ground being thus prepared, then get the plants, ſuch as above-mentioned, and prepare them for planting; obſerving to make choice of ſuch of the ſhoots or ſuckers only that are beſt furniſhed with ſome fibres to their root; taking theſe one by one, cut off the hard knobbed part at bottom, rejecting ſuch that are very tough and ſtringy, and trim the outer leaves down about one third or near half way, ſo as the central ones have full liberty to expand. Being thus trimmed, let them be directly planted by line and dibble, in rows five feet aſunder, and the plants two feet diſtance in each row, putting each plant three or four inches deep in the ground, cloſing the earth well about the root and body of the plant as you proceed in planting; and immediately let every one be watered, for this will ſettle the mold cloſe about them, fix every one firmly in its place, and promote their early rooting; obſerving, if the weather at this time proves dry, to repeat the waterings every three days, for a week or a fortnight, till they have taken freſh root, and begin to grow.

After this, they require no further culture during ſummer than to be kept clean from weeds, which is readily done by hoeing with a large hoe between the plants in dry weather.—And in the beginning of winter

winter the ground muſt be ridged up along each row, to defend the plants from froſt.

In making plantations of Artichokes, that if it is neceſſary to make the moſt of every piece of ground, as is conſequently the caſe with the market gardeners, you may ſow between the rows a crop of round-leafed ſpinach, with ſome ſhort-topped radiſh, and a ſprinkling of coſs lettuce, mixing the ſeeds together, and ſow them by broad-caſt; then tread in the ſeed and rake the ground, for the Artichokes will ſoon get the ſtart out of the way of theſe ſmall crops, and when they come off in June, may plant a row of cabbage or ſavoys along the middle of each ſpace between the Artichoke ranges, to come in for autumn ſervice.

But the kitchen-gardeners in the neighbourhood of London frequently plant their Artichokes at ſuch diſtance between the rows, as to have ſpinach, radiſhes, cauliflowers, pickling-cucumbers, and cabbage or ſavoys, all from the ſame ſpot. To do this, they allow ten feet between the rows of Artichokes, ſowing the ground, as above, with ſpinach, radiſhes, &c. in ſpring; and at the ſame time plant in each ſpace two rows of cauliflowers, at four feet diſtance, and two and a half apart in each row; and then, in the firſt week of June, when the ground is cleared from the radiſhes and ſpinach, they ſow cucumbers for pickling between the cauliflower rows, and in June or July plant, in the intervals between the rows of Artichokes and cauliflowers, a row of cabbage or ſavoys; the cauliflowers coming off in July or early in Auguſt, there will be full ſcope for the remaining crops; and the cabbage and ſavoys coming in for autumn uſe, will be all gathered by the middle or end of November, time enough for landing up the Artichokes.

*Their Culture when in Fruit.*

The plants of the new plantation will begin to ſhew their fruit or heads the beginning of Auguſt, and will be in the fulleſt perfection from about the middle of that month to the latter end of September; and ſometimes they continue fruiting gradually until November; but next year the ſame crop will come into fruit in June and July, and be moſtly all over in Auguſt; ſo that, as already noticed, if you would continne a ſucceſſion annually from June to November, always plant a few every ſpring, to come into fruit to ſucceed thoſe of older plants.

But with reſpect to the care of the plants when in fruit, obſerve, that, beſides the principal or top fruit, ſeveral collateral ſmall heads often ariſe from the ſides of the main ſtem, which ſide-ſhoots, or ſuckers, being diſplaced, the whole nouriſhment is conſequently directed to the principal head; therefore if you prefer one large handſome head to three or four ſmall ones, the above culture ſhould be conſtantly practiſed, from time to time, before the ſide heads exceed the ſize of a hen's egg.

Theſe ſmall ſide-heads or ſuckers are by many greatly eſteemed, being cooked in various ways, and ſerved up to table; and the London gardeners having great demand for them, they gather them as they are produced, and tye them in bunches for market.

But ſome perſons, not anxious about having very large heads, ſuffer the above-mentioned ſide-ſhoots to remain, rather preferring three or four middling ones, from the ſame ſtem, in ſucceſſive order, than only one large fruit.

The maturity of the Artichoke heads, is, when arrived to their full magnitude, diſcoverable by the ſcales diverging from each other conſiderably, but before the centre or crown opens, to ſhew an effort for flowering.

When the heads are to be gathered, you ſhould cut them with ſix or eight inches of the ſtalk at leaſt; but if for market, almoſt three times that length.

But as the heads are gathered, the whole ſtalk ſhould always be broken down cloſe to the ground, being abſolutely neceſſary to the welfare of the plants, by encouraging their ſtools to produce ſome new ſhoots more freely before winter.

In Covent-Garden and the other London markets, Artichokes are ſold commonly from about two to three ſhillings per dozen, and ſometimes at a little more or leſs, according to the kinds and ſize; but the globe kind is always the moſt ſaleable.

*Their Winter Dreſſing, and landing up, to protect them from Froſt.*

The winter culture of Artichokes is principally to land or earth up the rows, to guard the crown of the root and young ſhoots from ſevere froſt, which is done by digging the ground, and forming the earth into a ridge along each row over the roots, without which precaution, the inclemency of the winter

winter often proves deſtructive to thoſe plants.

This work ſhould be done towards the latter end of November, or beginning or middle of December, according as the weather continues more or leſs mild.

In the firſt place, cut down all the large leaves near the ground, preſerving only thoſe of the ſmall young ſhoots; and this may be done any time in November; then at the time above-mentioned, proceed to dig the ground between the rows, and work it up cloſe to the plants, in a ſort of ridge, along each row. But the moſt regular way is, that if the plants are in cloſe rows for a full crop, i. e. in rows five feet aſunder, range a line exactly along the middle of each ſpace between the rows, then with the ſpade chop the ground along according to the line; and thus you form beds five feet broad, one row of plants ranging along the middle of each bed; then dig the ground bed and bed a moderate ſpade deep, gradually working the earth from each ſide towards the middle in a ridge along the row of plants, as above obſerved, ſo as each row ſtand exactly in the middle of every ſuch ridge of earth; rearing the earth cloſe about the plants, but not quite over their tops; and this will greatly ſhield the crown of the root and young ſhoots from the effects of hard froſts.

But when the rows of Artichokes are ten feet diſtant, as in many of the kitchen-gardens, for the ſake of obtaining other crops between, you may then either ridge up the plants, in five-feet wide beds, as above directed, or trench all the ground in the common way, in ridges two or three feet wide, ranging the way of the rows, and digging them one ſpade deep; and as you advance to each row of plants, land them up, by forming a good ridge along the row, that each row ſtand in the middle of a ridge of earth, as in the other method.

Some perſons, however, inſtead of landing up the plants in either of the above methods, only draw a little earth, with a hoe or ſpade, up cloſe about the plants, and at the approach of ſevere froſt, add a covering of long dung litter, or ſome ſuch like light material; and ſome never land, nor draw any earth about them at all, only mulch the plants in December, or towards Chriſtmas, or ſooner, if hard froſts ſet in, laying ſome ſhortiſh dry mulch about each hole of plants, bringing it cloſe around about the ſhoots, and let it remain all winter, till danger is paſt; either of which methods is indeed often ſufficient in our ordinary winters; but as there is no knowing what weather will happen, ſo it is not always to be depended on; and there is nothing ſo effectual for the benefit of the plants, as ridging up the earth about them, as before directed.

Remember, however, that if the froſt in winter ſhould prove extremely ſevere, it is alſo adviſeable to lay over each ridge a covering of any kind of long dry litter, which, together with the ridge of earth, will effectually ſecure the plants.

Likewiſe obſerve, that if hard froſts ſet in before you have time to land the plants, do not fail, in that caſe, to lay a thick covering of dry litter over them.

All coverings that have been occaſionally uſed during hard froſt, ſhould be removed in February, or at leaſt as ſoon as the weather breaks; and in March or beginning of April the ridges of earth ſhould be levelled down, and the plants have their ſpring dreſſing as follows.

*Their Spring Dreſſing, by levelling down the Ridges, and diſplacing the ſuperabundant Shoots.*

In March or beginning of April, according to the forwardneſs of the ſeaſon, that the plants have made ſome tolerable ſhoots, the ridges of earth landed over them in winter for their protection, ſhould be levelled down, and all ſuperabundant and ill placed ſhoots cleared away, leaving only two or three of the moſt promiſing ſuckers upon each ſtool.

Taking opportunity of dry weather for this work, dig or level down the ridges of earth length-ways, row and row, ſtirring all the ground between and cloſe about the plants; and as you proceed, remove the earth from about the crown of the root and young ſhoots, as low as the part of the ſtock from whence they ariſe; then, if there are ſeveral ſhoots, fix upon two or three of the ſtraighteſt, moſt promiſing, and beſt ſituated on each root, toward the lower part of the ſtool, at ſome diſtance from each other; let all the reſt be cleared away, by ſlipping them off cloſe to the root, and directly draw in the earth again about the remaining ſhoots, cloſing the earth well around them, and preſs it gently between, to preſerve them as far diſtant from each other as their ſituation will admit, and trim off any broken or dangling leaves; and in this manner

manner treat every ſtock, as you advance in digging or laying down the ridges, obſerving to level the ground in a neat manner; and if you chuſe, the ſpaces between the rows may be ſown with ſpinach, &c. or any light crop, as obſerved at the time of making the plantation.

But I would remark of this ſpring dreſſing, that if in March you find the ſtocks ſhoot weakly, occaſioned by hard froſt or much wet, it will be proper, only for the preſent, to open and looſen the earth, and level down the ridges a little, to encourage the roots; and in three or four weeks after, when they have made tolerable ſhoots, may ſlip them as above, and dig and level the ground properly.

The young ſhoots which are ſlipped off in the above ſpring dreſſing, are, as before obſerved, the proper plants wherewith to make new plantations; a proper quantity of the beſt ſhould therefore be reſerved, making choice of ſuch that are ſtraight, from about eight or nine inches to a foot long, and whoſe bottoms cut free and criſp, rejecting ſuch that are very tough and woody at the baſe.

The ſooner they are planted after being ſeparated from the old plants the better; but if the ground ſhould not be ready, lay them till then, by the roots in a trench, placing them upright, for if placed ſlanting they, by aſſuming an upright growth, would become crooked.

If theſe plants are to be purchaſed, the true globe ſort is ſold at eight or ten ſhillings a hundred, and ſometimes a guinea, or more, after a hard winter.

When they are to be conveyed to any conſiderable diſtance, they ſhould be packed dry, in ſmall bundles of eight or ten, wrapping dry hay about them, and tying each bundle with a hay band, and pack the ſeveral bundles in hampers or large garden-mats; when they arrive, place the roots in water a few hours previous to planting.

*Of manuring the Plants.*

Such plantations of Artichokes which are permitted to remain ſeveral years in the ſame place ought to have the ground manured every other year, with ſome thoroughly rotten dung, applying it in November, at the time of landing up the plants, and dig it in one good ſpade deep.

By this practice a plantation of Artichokes will continue in good condition, and bear tolerable heads for ſeveral years; though as they grow old, the heads will be ſmaller in proportion.

*Second Species of Cynara, the Cardoon.*

The Cardoon, in its general habit, greatly reſembles the Artichoke plant, but is of larger and more regular growth; the leaves more upright, taller, broader, and more deep and regularly divided; and the ſtalks of the leaves, blanched, are the only eatable parts of the plant.

There is but one ſpecies, viz.

CYNARA *Cardunculus.*

*Cardunculus or Cardoon.*] Cynara, with thick, fleſhy, fibrey roots, crowned by a conſiderable cluſter of large, erect, deeply-pinnatifid leaves, four or five feet high, having all the lobes pinnatifid and thick prickly foot-ſtalks; and amidſt them, upright tall ſtems, terminated by ſcaly, Artichoke like heads, furniſhing flowers and ſeed. It is a hardy plant, and proſpers in the open quarters of the kitchen-garden.

This plant is often biennial in England, ariſing from ſeed in ſpring, obtains perfection in autumn and winter, ſhoots up ſtems in ſpring after, flowers in July, ripens ſeed in September, and the whole often dies the winter following in this country; but it rarely produces good ſeed here, ſo it is commonly procured by the ſeedſmen from France, Spain, and Portugal. The plant is large, regular, and of noble appearance in its general growth.

The ſtalks of the leaves being thick, criſp, and palatable, are the eatable parts, firſt blanching them like celery about a yard or more long, to render them white, tender, and agreeably flavoured, which otherwiſe would be rank and bitter; they are in perfection in autumn and winter, and are uſed for ſallads, ſoups, ſtewing, and other culinary purpoſes.

It is but of little eſtimation at preſent in England, nor is it much cultivated now by the market gardeners; it requiring ſo much room to grow, and there being but little demand for them, they often do not pay for the culture, though they ſell for five ſhillings or three half crowns a bunch, and only three plants in each.

A few of them, however, for variety, merit a place in every conſiderable kitchen-garden, both for uſe and market.

The

The plants being of conſiderable growth, require to grow in rows five feet aſunder, and four diſtant in the rows.

*Propagation and Culture.*

It is propagated by ſeed ſowed annually in the full ground in March, either in a bed for tranſplantation, or at once in the place where you deſign the plants ſhall ſtand to come to perfection. Moſt authors direct the former method, though ſome of them, ſeemingly, neither ſaw nor practiſed any, nor perhaps ever ſaw the plants; we, however, have practiſed both ways, and have experienced, that holeing in the ſeeds where the plants are to remain, is the moſt ſucceſsful culture, and is the method I have alſo lately obſerved practiſed in ſome of the moſt eminent kitchen-gardens in the vicinity of London; for the plants being rather of rampant growth, and very flaggy on removal in dry or hot weather, they do not ſucceed ſo well by that method, as when they always remain in the ſame place, in which they grow faſter, ſtronger, and ſooner arrive at a proper ſtate of growth for blanching.

But we ſhall exhibit the practical directions for both methods of culture.

Firſt by tranſplantation.—Sow the ſeed in March, or beginning of April, by broad-caſt, in a bed of rich earth, tread it in, and rake the ground, and when the plants are three inches high, thin them to four or five inches diſtance, that they may not draw each other weak; and in June they will be fit to tranſplant: in the beginning or middle of June, therefore, prepare an open ſpace of ground that has been dunged in the preceding winter or ſpring; and there draw lines five feet diſtance, and put in the plants by dibble, at four feet diſtance in the lines, either on level ground, or hole them, in wide baſon like holes, eighteen inches over, and ſix or eight deep, making the ſides ſloping, ſo looſening the bottom well, and ſet one good plant upright in each hole; give water directly, which repeat, if dry weather, every evening or morning till they have taken root; after this, all they require is hoeing the ground occaſionally to kill weeds, until the end of September or October, when the plants will be arrived nearly at full growth, ſo as the leaves of the different plants will almoſt meet, and thoſe of each plant are then to be tied together, and landed up to blanch them, as hereafter directed.

By ſowing where they are to remain.—Let the ground be marked out in lines five feet diſtance, as in the tranſplanting method, then along each line form baſon-ſhaped holes, eighteen inches wide, and about three deep, the holes four feet from centre to centre; in each hole drill in three ſeeds, ranging the way of the row, covering them half an inch deep; give occaſional waterings in very dry weather; and when the plants are come up three or four inches high, thin them to one of the ſtrongeſt in each hole; at the ſame time clear away weeds, and ſtir the earth with a hoe about each remaining plant; and thus they will grow more freely and ſtronger than thoſe which are tranſplanted, and ſooner arrive to full ſize, with large ſtalks, in fine order for general blanching.

Theſe plants are cultivated in wide rows, on account of their large growth, as well as for the convenience of having a ſufficient portion of earth to land them to a due height, i. e. two or three feet at leaſt; but in rich ground they often grow four feet high, and it is neceſſary to land them up, for blanching, almoſt their full length.

All the culture neceſſary for theſe plants during their growth till fit for blanching is, to keep them clean from weeds, by hoeing the ground.

As theſe plants ſtand at conſiderable diſtances from each other, you may have ſome ſmall temporary crops between the rows the firſt three months, ſuch as ſpinach, lettuce, endive, cabbage, ſavoy, or broccoli plants, for tranſplanting, &c. obſerving to keep the holes of Cardoons perfectly clear from every thing.

*Method of landing them for blanching.*

In the latter end of September, or in October, the Cardoons will be grown very large, and their foot-ſtalks have acquired a thick ſubſtance, you muſt then tye up the leaves of each plant, to admit of landing them up cloſely all around, for blanching, which will be ſix or eight weeks in effecting, and the plants will come in for uſe in November and December, and continue all winter.

But if the plants are required for uſe as ſoon as poſſible in autumn, the blanching may be begun in Auguſt, ſo as to have the plants for uſe towards the latter end of September and October; but by tying up, and landing the plants before they are full grown, they never acquire a due ſubſtance in the ſtalk, and the excellence of a Cardoon is, to have

the ſtalks (the eatable part) broad and thick.

The method is, firſt, having hoed and cleared the ground from weeds, then, having procured ſome hay-bands an inch and a half thick, proceed with theſe materials, on a dry day, to tye up the leaves of each plant moderately cloſe, and regularly together, winding the hay-band cloſely around the plant almoſt to its top; this done dig the earth, and as you proceed, bank it up cloſe round each plant nearly as high as the tying or bandage, ſmoothing it with the back of the ſpade, both to fix it properly, and that it may readily ſhoot off the wet; obſerving, if the plants ſhould advance more in height, to continue the tying of hay-bands higher in proportion; for it is neceſſary to have them tyed up nearly their full height, both to blanch them more effectually, and ſecure them from injury of wet and froſt.

To obtain a more regular ſucceſſion, the landing may be performed only to about one third of the plants at a time, allowing the diſtance of a fortnight between each time of landing.

In ſix or ſeven weeks the plants are ſometimes tolerably blanched, but in two months or ten weeks, they are generally in excellent order.

They may be continued all winter, with the care of covering the tops of the plants with long litter during hard froſts.

To ſave Cardoon ſeeds.—Cultivate a few plants in a ſheltered ſunny place; let them ſtand unblanched, protecting them from froſt with light litter; they will ſhoot up in ſpring following, flower in July, and if a fine warm dry autumn, they will ripen ſeed towards Michaelmas.

CYNOGLOSSUM, Hound's Tongue.

It furniſhes hardy herbaceous biennials, perennials, and annuals, for medical uſe, and as flowering plants for ornament in gardens.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX is oblong, five-parted, and permanent. COROLLA is monopetalous, funnel-ſhaped, five-parted at the brim, and the chaps cloſed. STAMINA, five filaments, and roundiſh antheræ. PISTILLUM, four germen, permanent ſtyle, and indented ſtigma. PERICARPIUM none, but four ovilli, having four ſeeds.

The material ſpecies are,

[1]CYNOGLOSSUM *Officinale.*

*Officinal, or Common biennial Hound's Tongue.*] Cynogloſſum, with large, thick, blackiſh roots, crowned by large, oval, ſpear-ſhaped, hoary leaves, and amidſt them, upright firm ſtalks two feet high, adorned with narrow cloſe-ſitting leaves, and terminated by reddiſh flowers, in June and July.

*Varieties.*] White flowering Hound's Tongue—Evergreen Hound's Tongue.

This ſpecies and varieties may be conſidered both as biennials and perennials, becauſe in moiſt ſoils they often die ſoon after they have perfected ſeeds; but in dry gravelly ſoils, the roots are often of ſeveral years duration.

It grows wild under hedges, and is chiefly valued for its root in medicine.

[2]CYNOGLOSSUM *Omphalodes.*

*Omphalodes, or perennial, creeping, Venus Navel Wort.*] Cynogloſſum, with ſlender trailing ſtalks, creeping and rooting at every joint, heart-ſhaped ſmooth leaves, on long foot-ſtalks; and from the axillas of the ſtalks, bright blue flowers in looſe panicles, appearing in March, April, and May.

[3]CYNOGLOSSUM *Linifolium.*

*Flax-leaved Annual Hound's Tongue, or Common Venus Navel-Wort.*] Cynogloſſum, with upright, ſlender, branchy ſtalks, ſix or eight inches high, garniſhed with long, very narrow, ſmooth, greyiſh leaves; and all the branches terminated by looſe panicles of ſmall white flowers, in June and July.

[4]CYNOGLOSSUM *Luſitanica.*

*Portugal Annual Hound's Tongue, or Taller Venus Navel-Wort.*] Cynogloſſum, with upright branchy ſtalks ten or fifteen inches high, garniſhed with ſpear ſhaped rough leaves, and all the branches terminated by looſe ſpikes of white flowers, in June and July.

The flowers of all theſe plants are ſingly, of one funnel-ſhaped petal, are ſmall but pretty numerous, which in the firſt, third, and fourth ſorts, are ſucceeded by plenty of ſeeds.

Of theſe four ſpecies, the ſecond, third, and fourth ſorts, are thoſe that merit culture as flowering plants, and are pretty ornaments for the fronts of borders, &c. the two latter of which have been long inhabitants of our gardens, in the collection of hardy annuals.

They are all hardy, and proſper in the open borders.

*Propagation.*

The firſt ſpecies may be raiſed by ſowing the ſeed in any ſoil in autumn or ſpring,

and they will riſe plentifully in March or April.

The ſecond ſpecies propagates itſelf abundantly by its rooting ſtalks, cuttings of which may be taken off with roots, in ſpring, ſummer, or autumn, and planted where they are to remain.

The two annual ſorts are always raiſed from ſeed in ſpring, ſown in patches in the borders where they are to flower, ſowing ſeveral ſeeds in each patch a quarter of an inch deep; and when the plants come up, occaſional water and weeding is all they require, and by two or three different ſowings, they will flower from June till the end of ſummer.

CYPRIPEDIUM, Ladies Slipper.

It conſiſts of two ſpecies of hardy herbaceous perennials for ornament, growing erect about a foot high, garniſhed with large oval leaves, and crowned by large, quadripetalous, nectarious flowers.

Claſs and order, *Gynandria Diandria.*

*Characters.*] CALIX is a ſpatha. COROLLA, four or five long, ſpear-ſhaped, expanded, erect petals, and in the midſt a large, ſwollen, roundiſh, hollow nectarium. STAMINA, two ſhort gynandrous filaments, and erect antheræ. PISTILLUM, a long contorted germen, ſhort ſtyle, and obſolete ſtigma. PERICARPIUM, an oval, trigonous, three-furrowed, unilocular capſule, and numerous ſeeds.

The ſpecies are,

[1]CYPRIPEDIUM *Calceolus.*

*Calceolus Maria, or Common Ladies Slipper.*] Cypripedium, with thick, fleſhy, fibrous, creeping roots, ſending up, in ſpring, ſeveral upright robuſt ſtalks a foot high, adorned with large, oval, ſpear-ſhaped, ribbed, cloſe-ſitting leaves, placed alternate, and ſurmounted by a ſpatha, protruding a large flower, expanding its four petals cruciforme, having in the centre a large hollow nectarium; the whole very elegant, and of different colours in the varieties.

*Varieties are*] Common Ladies Slipper, with deep-purple flowers——Pale-purple flowers—Golden flowers—Red flowers——Large yellow flowers—With variable flowers.

This ſpecies and reſpective varieties are perennial in root, but the ſtalks and leaves riſe annually in ſpring, and decay in autumn, and all the ſorts flower in June; are extremely ornamental, and their ſtructure ſingularly curious, particularly in their large roundiſh nectarium, which is feigned to reſemble a ſlipper; hence the plants derived the name.

It grows wild in ſome ſhady woods in Britain, but it nevertheleſs highly merits culture in every eminent garden, both as a plant of curioſity and ornament.

[2]CYPRIPEDIUM *Bulboſum.*

*Bulbous Ladies Slipper.*] Cypripedium, with a roundiſh bulbous root, crowned by radical roundiſh leaves; and between them erect low ſtalks, terminated each by one large flower, having an oblong nectarium.

Both the ſpecies, &c. are perennial in root, but annual in ſtalk and leaves.

The flowers of all the ſorts appear the end of May or in June, all of them compoſed of four or five large expanded petals, and a very conſpicuous nectarium in the centre; ſucceeded by ripe ſeeds in Auguſt, and they ſoon after decay to the roots.

They are very hardy, and delight in a ſomewhat moiſt undunged ſoil, open only to the morning ſun. They ſucceed either in the full ground or in pots.

*Propagation, &c.*

The firſt ſort and varieties, having knotty, fibrey, creeping roots, may be propagated by dividing or taking off joints in autumn, as ſoon as the ſtalks decay.

The bulbous ſort is alſo increaſed by the roots when the ſtalks decay.

Both the ſpecies may alſo be raiſed from ſeed, ſown in autumn in a ſhady border, and the plants will flower the ſecond or third year; eſpecially if ſuffered to ſtand where they were ſowed.

Theſe plants ſhould not be often removed, which would retard their flowering.

CYTISUS, Tree Trefoil.

This genera furniſhes ſome elegant flowering ſhrubs and evergreens, of hardy growth, for the pleaſure ground, adorned with oval leaves by threes, and long ſpikes of yellow papilionaceous flowers.

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX is bell-ſhaped, ſhort, and divided into two lips, the upper one bifid, and the under one three-parted. COROLLA is papilionaceous; the ſtandard oval, riſing, and reflexed on the ſides; the wings obtuſe, and the length of the ſtandard, and the keel bellied and acute. STAMINA, ten diadelphous filaments, and ſimple antheræ. PISTILLUM, an oblong germen, ſimple ſtyle, and obtuſe ſtigma. PERICARPIUM, an

oblong blunt pod, narrow at the baſe, and kidney-ſhaped ſeeds.

There are about five ſpecies of *Cytiſus* in the Engliſh gardens, three of them deciduous ſhrubs, and one or two evergreens.

The ſpecies of our gardens are,

[1]CYTISUS *Laburnum.*

*The Laburnum, or Large Deciduous Cytiſus.*] Cytiſus, with a large upright tree-ſtem, branching into a full-ſpreading head, twenty or thirty feet high, having ſmooth greeniſh branches, oblong-oval entire leaves, by threes, on long ſlender foot-ſtalks; and from the ſides of all the branches, numerous yellow flowers collected in long ſpikes, hanging looſely downward, appearing in May.

*Varieties of this are*] Common broad-leafed Laburnum—Narrow-leafed, long ſpiked Laburnum, having very long pendulous ſpikes of flowers—Short-ſpiked Laburnum, having ſhort, roundiſh, thick ſpikes of flowers—Variegated-leaved Laburnum. The firſt two of which varieties are tolerably permanent from ſeed, but the other two muſt be continued by cuttings.

All theſe varieties are deciduous, but their leaves appear early in ſummer, which, together with their numerous, long, pendulant ſpikes hanging from every part of the branches, appear very ornamental, and are well adapted to place on the borders of woods, wilderneſſes, and large ſhrubbery plantations, on the boundaries of lawns, parks, &c.—And, although they are generally conſidered only as ornamental ſhrubs, if encouraged by training them to a ſtem at firſt, and ſuffered to ſtand, they will form moderate-ſize timber-trees: they grow naturally on the Alps, the mountains of Dauphiné, and in the Highlands of Scotland; and the timber being very hard, and taking a fine poliſh, is frequently uſed for making chairs, tables, bedſteads, and other furniture, which are ſaid to equal the fineſt mahogany in beauty.

The trees are ſo very hardy, that they will proſper any where, and are of very quick growth.

[2]UYTISUS *Seſſilifolius.*

*Seſſil-leaved Diciduous Cytiſus, often called Cytiſus Secundus Cluſii.*] Cytiſus, with a low ſhrubby ſtem, branching into numerous, erect, browniſh branches, forming a buſhy head five or ſix feet high, garniſhed with ſmall oval leaves by threes, ſome on very ſhort foot-ſtalks, others ſitting cloſe, and bright yellow flowers in ſhort erect ſpikes at the ends of the branches, appearing in June.

[3]CYTISUS *Nigricans.*

*Black Cytiſus.*] Cytiſus, with a ſhort ſhrubby ſtem, dividing low into many erect ſlender branches, forming a buſhy head four or five feet high, oblong-oval, dark-green, triſoliate leaves, and yellow flowers, terminating all the branches in upright ſpikes, appearing in July.

[4]CYTISUS *Hirſutus.*

*Hairy Evergreen Neapolitan Cytiſus.*] Cytiſus, with an upright, ſhrubby, grey ſtem, ſending out many erect, greeniſh, hairy branches, forming a fine head ſix or eight feet high, cloſely garniſhed with ſmall, oval, hairy folioles by threes, on ſhort foot-ſtalks, and yellow flowers from the ſides of the branches in ſhort pendulous ſpikes, having trifid hairy cups, appearing in June.

This ſpecies being rather impatient of very ſevere froſt, ſhould have a dry ſoil, and ſheltered ſituation in the ſhrubbery.

[5]CYTISUS *Auſtriacus.*

*Auſtrian, or Tartarian Evergreen Cytiſus.*] Cytiſus, with a ſhrubby ſtem, dividing low into many greeniſh branches, forming a buſhy head three or four feet high, cloſely garniſhed with oblong-oval, ſmooth, whitiſh-green leaves, and bright yellow flowers, in cloſe umbellate heads at the ends of the branches, having a cluſter of leaves under each head; appearing in May.

*Variety.*] Auſtrian,—Siberian Cytiſus, with ſmaller leaves, naked flower-ſtalks, and ſmaller flowers.

Theſe five ſpecies have univerſally trifoliate leaves, i. e. three folioles on each foot-ſtalk.

The flowers of all the ſorts are papilionaceous, or butterfly-ſhaped, conſiſting of the ſtandard, two wings, and the keel; all of them flower abundantly in this country, and are ſucceeded by oblong pods, containing plenty of ripe ſeed in autumn.

All theſe ſhrubs have great merit in ornamental plantations, either to aſſiſt in forming clumps or continued ſhrubberies; their numerous trifoliate leaves being finely adapted for effecting variety in aſſemblage, and during their bloom, they appear covered with flowers.

The large ſorts, ſuch as the ſeveral varieties of *Laburnum*, ſhould be ſtationed rather backward in clumps, and other ſhrubbery works; and the other four ſpecies ſhould occupy

cupy places more towards the front, and in the moſt conſpicuous departments.

They ſhould all be ſuffered to retain their natural growth, except only cutting off any very irregular ſhoot or branch.

All the ſorts are hardy, and will proſper in any common ſoil and expoſure; though, as the *Cytiſus Hirſutus* is ſometimes affected by ſevere froſt, it ſhould have a dry ſoil, and ſomewhat ſheltered ſituation.

*Propagation.*

All the ſorts are raiſed plentifully by ſeed, and ſome ſorts by cuttings.

By ſeed.—The ſeed grows freely in the full ground, and ſhould be ſown in March, in four-feet beds, either drilling it in, half an inch deep, or ſow it on the ſurface, and cover it that depth with earth; they will come up in ſix or ſeven weeks; keep them weeded during ſummer, and in winter it may not be amiſs to protect the *Cytiſus Nigricans* and *Cytiſus Hirſutus*, by occaſional ſhelter of mats, during ſevere froſt; and in ſpring following, the ſeedlings in general, if they ſtand very cloſe, may be tranſplanted into the nurſery, in rows two feet diſtance, the Laburnums and the others a foot; allowing them more room as they advance in growth; and here they may remain two, three, or four years, till large enough for the ſhrubbery.

By cuttings.—Moſt of the deciduous ſorts will alſo ſucceed this way, and October and November is the beſt time for planting them. Chuſe young ſhoots eight, ten, or twelve inches long, plant them in rows a foot apart, and five or ſix inches in the lines; and they will be rooted in one year.

All the culture theſe plants require in the nurſery, is to keep them clear from weeds, and to dig the ground annually between the rows.

# D.

DAPHNE, Spurge Laurel, and Mezereon.

This genus conſiſts of low ornamental ſhrubs, of the evergreen and deciduous tribe, adorned with ſpear-ſhaped leaves, and ſmall, but numerous, monopetalous, four-parted flowers.

Claſs and order, *Octandria Monogynia.*

*Characters.*] CALIX, none. COROLLA is monopetalous, funnel-ſhaped, and divided into four oval ſpreading ſegments. STAMINA, eight ſhort filaments inſerted into the tube, and erect bilocular antheræ. PISTILLUM, an oval germen, ſhort ſtyle, and a capitated depreſſed ſtigma. PERICARPIUM, a roundiſh unilocular berry and one ſeed.

There are ſeven or eight ſpecies, but not more than two common to the Engliſh gardens, and which are the moſt beautiful and the only ſorts that demand particular attention in horticulture.

The firſt is an evergreen, and the ſecond is deciduous, viz.

1 DAPHNE *Laureola.*

*Laureole, or Spurge Laurel.*] Daphne, with many greyiſh-coloured ſtalks from the root, branching irregularly three or four feet high, cloſely garniſhed with thick, ſpear-ſhaped, ſmooth, ſhining, evergreen leaves, ſitting cloſe to the branches; and from the upper parts, numerous, ſmall, yellowiſh-green flowers in cluſters, ſucceeded by oval berries, ripening to a black colour; flowers in January and February, and the ſeeds ripen in June.

*Variety.*] Variegated-leafed Laureola.

2 DAPHNE *Mezereon.*

*The Mezereon.*] Daphne, with a ſhort, ſtrong, woody ſtem, branching out low into many erect branches, forming a regular buſhy head, four or five feet high, garniſhed with ſmall, ſpear-ſhaped, deciduous leaves about two inches long, and the upper parts of all the branches and young ſhoots cloſely adorned with numerous flowers, by threes, coming out early before the leaves, of different colours in the varieties, and ſucceeded by many roundiſh berries, in ſome yellow, others red.

*Varieties.*

*Varieties.*] Mezereon with white flowers and yellow berries—Purple flowers and red berries—Pale-red flowers and red berries—Crimſon flowers and red berries—With variegated leaves, ſtriped with yellow.

The flowers of both theſe ſpecies and reſpective varieties conſiſt each of one four-parted petal, very ſmall, but numerous, and thoſe of the Mezereon are the moſt conſpicuous and beautiful; all the ſorts flower early, and are ſucceeded by many berries, each furniſhing one ſeed; ripe in June and July.

Both the ſpecies are very hardy, and proſper in any ſituation and ſoil of a garden.

The firſt ſpecies, *Daphne Laureola*, is an inhabitant of our woods, and being a hardy and delightful little evergreen is peculiarly adapted for wilderneſs and wood-works in gardens, as it will flouriſh under larger ſhrubs and the drip of trees; is alſo proper for any other ſhrubbery departments, no weather hurts it, and remains always green.

The *Mezereon* and varieties are all deciduous, but flower remarkably beautiful in February and March before the appearance of leaves, every ſhoot being covered with flowers, are extremely ornamental at that early ſeaſon, as well as very diffuſe in a moſt agreeable fragrance; and when they fade, the leaves advance, and the berries continue their growth, ripening in June and July; which have alſo a pretty effect in forming variety, but are generally ſoon devoured by the birds.

The ſeveral varieties are proper ornamental furniture for gardens of any extent, and ſhould occupy the moſt conſpicuous parts of ſhrubbery-works contiguous to lawns, principal walks, and places near the habitation.

Every part of thoſe ſhrubs are of a remarkably hot quality, particularly the root, which is uſed in medicine; for which purpoſe ſome gardeners near London, cultivate many of the Mezereons to ſtand ſeveral years to acquire large roots, then dig them up occaſionally, cut off the root, and ſell them for three or four ſhillings per pound to the druggiſts and phyſic-herb-ſhops.

### *Propagation.*

Both ſpecies are raiſed with facility from ſeeds, i. e. the berries which the ſhrubs furniſh in great plenty, if ſecured from birds, by netting them, as ſoon as they begin to ripen.

The ſeeds grow freely in the common ground, and the beſt time for ſowing them is in autumn, ſoon after they are ripe; and there will be a chance of their coming up the ſpring following, otherwiſe, when not ſowed till ſpring, they often remain a whole year before they germinate. Having procured the berries, dig a bed of light earth, and rake it fine; then, either draw an inch of earth off the ſurface, and ſow the ſeed, and cover them over with earth, or draw flat drills that depth and ſix inches diſtance, ſow the berries therein, earth them over as above, and ſmooth the ſurfaee.

The plants will appear in April or May; keep them weeded all ſummer, and in autumn or ſpring following, if they ſhould ſtand very cloſe in the ſeed-bed, the largeſt may be tranſplanted; otherwiſe they may remain until the ſecond autumn till October, then plant out the whole in the nurſery, in rows eighteen inches diſtance, to remain till two or three feet high, and are then fit for the ſhrubbery.

DATURA, Thorn-Apple, formerly *Stramonium.*

This genus furniſhes ſome herbaceous, large, erect, flowery annuals for the pleaſure-ground, riſing three or four feet high, branchy, and adorned with very large, oval, and heart-ſhaped leaves, and conſiderable funnel-ſhaped flowers.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX is monophyllous, oblong, tubular, ventricoſe, five-angled, and indented in five parts. COROLLA is monopetalous, funnel ſhaped, having a long cylindrical tube, a pentangular ſpreading limb, riſing at the angles into acute points. STAMINA, five awl-ſhaped filaments, and oblong compreſſed antheræ. PISTILLUM, an oval germen, erect ſtyle, and thick obtuſe ſtigma. PERICARPIUM, an oval, bilocular, quadrivalvular capſule, and numerous kidney-ſhaped ſeeds.

There are about four ſpecies in the Britiſh gardens, all of them annual, and of erect ſtrong growth, riſing each with a ſingle luxuriant ſtem, dividing into many ſpreading branches.

The ſpecies are,

1 DATURA *Stramonium.*

*Stramonium, or Common Thorn-Apple.*] Datura, with an erect, ſtrong, round, hollow, green ſtalk, branching luxuriantly a yard high, having the branches widely extended on every ſide; large, oval, irregularly-angulated, ſmooth, dark-green leaves; and from the

the diviſions of the branches large white flowers ſingly, ſucceeded by large, oval, prickly capſules, growing erect, commonly called Thorn-Apples.

This is often found wild upon dunghills, but is often cultivated in gardens for variety; where, if the ſeeds are ſuffered to ſcatter, numbers of young plants will riſe naturally for ſeveral years after.

[2]DATURA *Tatula.*

*Tatula, or Great Purple Stramonium.*] Datura, with an erect, large, purple ſtalk, branching four or five feet high, and widely on every ſide, large, heart-ſhaped, angulated, indented, ſmooth leaves; and, from the axillas of the branches, long purple flowers ſingly, ſucceeded by oval, ſpinous, erect capſules.

*Variety.*] With white flowers.

[3]DATURA *Metel.*

*Metella Nut, or White African Thorn-Apple.*] Datura, with an erect large ſtalk, branching two or three feet high, large heart-ſhaped, almoſt entire, downy leaves, and, from the axillas of the branches, long, widely expanded, pure white flowers ſingly, ſucceeded by ſpinous drooping capſules.

*Variety.*] With double flowers.

[4]DATURA *Faſtuoſa.*

*Ægyptian Purple Thorn-Apple.*] Datura, with an erect, purple, ſhining, ſmooth ſtalk, branching three or four feet high, large, ſinuated, ſmooth leaves, and, from the axillas of the branches, large widely-expanded flowers, purple without, and pure white within, ſucceeded by globular drooping capſules, ſet with many blunt tubercles.

*Varieties.*] Ægyptian Thorn-Apple with ſingle flowers—ſemi-double flowers—and with double flowers.

The flowers of all theſe annuals are univerſally of one large funnel-ſhaped petal, having a long tube and ſpreading pentagonal limb, ſucceeded by large roundiſh capſules the ſize of middling apples, which being cloſely ſet with ſharp ſpines, derived the name Thorn-Apple.

They all flower in June, July, and Auguſt, and are ſucceeded by capſules in autumn, furniſhing abundance of ſeeds.

The firſt and ſecond ſpecies are hardy, and eaſily raiſed in the natural ground.

But the third and fourth ſorts are tender, and require to be raiſed in a hot-bed, and from which, either tranſplanted into pots, or in the borders of the pleaſure-ground.

The ſpecies in general are conſidered as plants of ornament, though the firſt ſort often becomes a troubleſome annual weed; but this and the ſecond merit a place in large borders for variety; and the third and fourth ſpecies, and reſpective varieties, being extremely beautiful in their flowers, demand admittance in the collection of curious annuals. See ANNUAL PLANTS.

*Propagation, &c.*

The hardy ſorts may be ſown in autumn or ſpring, in the borders and other compartments of the pleaſure-ground where you deſign they ſhall flower; ſowing them in patches four or five ſeeds in each, half an inch deep; and when the plants come up, thin them to one of the ſtrongeſt in each patch.

But the third and fourth ſorts muſt be ſown in March, in a hot-bed, under frames and glaſſes, in common with other tender annuals, ſuch as balſamines, egg-plants, marvel of Peru, &c. See ANNUAL PLANTS. When they come up, admit air daily by tilting the lights; and in April, when the plants are two or three inches high, prick ſome ſingly in pots, and plunge them alſo in a hot-bed, as directed for amaranthus, cock's comb, &c. to forward them, and draw them up tall; others may be pricked in the earth of the hot-bed, ſix inches diſtance; and in June, the whole ſhould be moved into the open air, placing thoſe in pots to adorn fore-cours, and the reſt may be taken up with balls, and planted in the compartments of the pleaſure-garden.

DAUCUS, the Carrot.

This genus furniſhes ſeveral herbaceous ſpecies, but of which only one claims eſteem for general gardening, which is a biennial eſculent, moſt valuable for its large eatable root, and which is the *Daucus Carota*, or Common Carrot; the others having but little merit, either for uſe or ornament, are rarely cultivated.

Claſs and order, *Pentandria Digynia.*

*Characters.*] CALIX, an umbellate flower, compoſed of many ſmaller umbels, the general umbel having a many-leafed involucrum, which for the partial umbels is more ſimple and ſhort. COROLLA, a radiated, difform, general umbel, having numerous florets, each compoſed of five, heart-ſhaped, inflexed petals. STAMINA, five filaments, and ſimple antheræ. PISTILLUM, a ſmall germen under each floret, two reflexed ſtyles, and

and obtuſe ſtigma. PERICARPIUM, none. SEMEN, a ſmall, two parted, hairy fruit, each having two ſeeds.

The ſpecies denominated Carrot is,

DAUCUS *Carota.*

*Carota, or Carrot* ] Daucus, with a large, long, taper, perpendicular root, fifteen or eighteen inches long, crowned by many long, erect, finely-divided leaves, and when it ſhoots for ſeed, an upright ſtalk, branching out three or four feet high, having all the branches terminated by large white umbels, in May and June, ſucceeded by hairy ſeeds in Auguſt.

Of this ſpecies there are ſeveral varieties, in reſpect to the colour of the root, though there is only one ſort in general eſteem.

*Varieties are*] Carota with an orange-coloured root, commonly called *Orange Carrot* —With a red root—With a purple root—With a yellow root—With a white root—— all of them wholeſome for eating.

They are all biennial, riſing from ſeed one year, and obtain perfection; and the next they ſhoot up into ſtalk, produce flowers and ſeed, and the root ſoon after dies.

Of theſe varieties, the firſt ſort, *Orange Carrot*, is that which is moſt proper for general culture; it grows longer, larger, and commonly of more handſome growth than the others; as, when cultivated in a light, looſe, deep ſoil, they often grow fifteen or eighteen inches long in the eatable part; and from two to three or four inches diameter at top, diminiſhing gradually in ſize to the lower end; but as one method of culture ſuits the whole, a few of the others may alſo be raiſed by thoſe who are fond of variety, as they are all eaſily raiſed in any quantity from ſeed annually, ſown at almoſt any time of the year, though the ſpring is the proper period for ſowing the general crops.

The principal ſeaſon of Carrots is from June until Chriſtmas; but by different ſowings, as hereafter mentioned, they may eaſily be obtained throughout the year.

*Propagation and Seaſons for ſowing.*

All the varieties are propagated by ſeed annually in ſpring; or, to obtain a greater ſucceſſion, may be ſowed at three or four different times of the year; obſerving, however, that the principal ſowing ſeaſon is, from about the middle of February to the latter end of March, being the only proper period for ſowing the main or general crop, which will furniſh a ſupply of Carrots from June till March following.

However, when young Carrots are required as early as poſſible, and a ſucceſſion of ſuch to be continued during ſummer and autumn, &c. four different ſowings ſhould be performed in the following order:

The firſt or early ſowing to be about Chriſtmas, or in the beginning, middle, or any time of January, in mild dry weather, on a warm rich border, or in any rich, dry, ſheltered ſituation; they will come in for uſe early in May.—But as theſe early crops are not always ſo ſucceſsful as thoſe of the February or March ſowings, no conſiderable ſpace of ground ſhould be ſowed, only a little to come in a few weeks before the general crop.

The ſecond ſowing, or main crop, may be performed towards the latter end of February, or firſt or ſecond week in March, but not later than the end of that month; though ſowings in April or May will ſucceed, but then the Carrots will ſcarcely acquire half the ſize of thoſe ſown in February and March; therefore mark this for the main crop, as from which ſowings we may obtain good Carrots from June till March following, that is, it will furniſh fine young Carrots in June and July, but will be of a handſome large ſize in Auguſt, and by the end of September or October, they will be arrived to full perfection, which in November ſhould be taken out of the ground, and preſerved in ſand for winter and ſpring uſe, becauſe, if left longer in the ground after being arrived at full growth, they would canker, and rot away in winter.

The third ſowing, effected about the middle of July, will furniſh a ſupply of young Carrots in the latter end of September, October, November, &c.

And, a fourth ſowing is performed about the middle or latter end of Auguſt, to ſtand the winter for an early ſpring crop; for the plants coming up in September, continue a ſlow growth all winter, till retarded by froſt; and then, if ſheltered in very ſevere froſts by a light covering of dry long litter, juſt to preſerve their tops or leaves entire, will be of much advantage, and you will obtain young Carrots in March and April, or till thoſe of the early ſpring-ſowing come in: theſe autumn ſown Carrots, however, are apt to be tough and ſticky, but as they come at an early ſeaſon, when young Carrots are a rarity, they are, therefore, nevertheleſs always acceptable both for

for family-uſe and in market, and with which the London gardeners ſupply the markets plentifully from March until May, or till the arrival of the early ſpring-ſown crops.

Early Carrots may alſo be obtained by aid of artificial heat. See their *Culture in Hot-beds.*

*Of the proper Soil for them, and its Preparation.*

The ſoil moſt proper for Carrots is that which is light, looſe, and of ſome conſiderable depth; and if inclinable to a ſandy nature, in a moderate degree, it will be an advantage; it is therefore neceſſary always to chuſe a ſpot of the lighteſt and deepeſt ſoil in the garden, and ſuch as hath been heretofore enriched with proper manure, obſerving, if it has been dunged the preceding year, it is more eligible than dunging it the ſame ſeaſon, as freſh dunged land is apt to promote worm-eaten, or a ſort of canker in the roots of the Carrots; but where the ground is ſo poor, that you conceive dunging is neceſſary, uſe that which is thoroughly rotted, and ſpread it evenly over the ſurface of the ground, to be trenched in regularly.

As to ſituation, an open expoſure free to the ſun and air, as diſtant from ſpreading trees as poſſible, ſhould be choſen, eſpecially for the main crops, which ſhould always be in the large open quarters.

The neceſſary ſpace of ground to ſow for family ſervice is, for the main crops, from about two or three to fifteen or twenty rod, according to the ſize of the family.

The ground ſhould be trenched one full ſpade deep at leaſt; but, where the depth of proper ſtaple will admit, it is adviſeable to trench it two moderate ſpades depth; for as Carrots often ſtrike two feet perpendicularly into the ground, they conſequently require a conſiderable depth of looſe ſoil, whereby the ſwelling part of the root will be long, ſtraight, and of large ſize; obſerving likewiſe, that it is adviſeable for the ground to be trenched up in rough ridges in winter ſome months before the ſowing ſeaſon, that it may be well meliorated by the weather, which will be of ſingular advantage, and is particularly neceſſary for the early and general crops; and at ſowing time, it is ſoon levelled down for the reception of the ſeed: it is alſo of much importance in trenching the ground to take but thin ſpits, and break all large clods, ſo as the parts may be well ſeparated or divided, that the roots may have full liberty to perform their perpendicular growth; for when obſtructed in that by the too compactneſs or lumpineſs of the earth, they grow ſhort, branch or divide into forks, and become very irregular.

Having therefore ridged the ground, as above, in winter, then, at the ſowing-ſeaſon, take advantage of dry fine weather to level it down for ſowing, ſtir every part, and preſerve a level ſurface; and, as ſoon as the ground is thns prepared, if the ſurface is not wet, but will readily rake without clogging, directly ſow the ſeed, at leaſt the ſame day, while the earth is freſh ſtirred, and before rain falls to wet the ſurface and render it cloggy, or is too much dried by the ſun and wind; and the following is the method of ſowing.

*Method of ſowing the Seed.*

Always, if poſſible, procure new ſeed of the former year's ſaving, for that which is more than one year old never grows freely; the neceſſary quantity is, at the rate of about a pound and a half to an acre; ſo that for the largeſt family garden, a quarter of a pound is ſufficient, and is ſeldom more than a ſhilling or eighteen pence per pound.

It muſt be ſowed by broad-caſt, or ſcattered as equally as poſſible all over the ſurface of the ground, and raked in.

A calm dry day muſt be choſen for ſowing this ſeed, otherwiſe being of very light ſubſtance, the wind would blow it away; but previous to ſowing it, as beſides its being of the above light nature, it adheres cloſely together by its rough hairy borders, it is proper to mix therewith ſome ſand or fine dry mold, rubbing the whole between the hands, both to ſeparate the ſeeds, and cauſe the ſand to adhere a little, to render them more weighty; by this means you will be able to ſow it regularly, which otherwiſe would be apt to fall in heaps; then having prepared the ground, as before directed, ſow the ſeed on the ſurface, moderately thin, and directly rake it in; or the ground may previouſly be formed into five feet wide beds, having ſpade-wide alleys between, which may be neceſſary in moiſt or heavy ſoils, or when it is deſigned to thin out the Carrots by degrees for uſe, ſo may ſtand in the alleys to ſow, and rake in the ſeed, alſo to thin out the young Carrots occaſionally, without treading on the beds to bind the earth too cloſe. But where the

ground is light, looſe, and dry, the ſeed may be ſown all over the piece; then tread the ground over evenly with the feet almoſt cloſe together, taking ſhort ſteps, being neceſſary both to bury the ſeed more equally, and ſettle the ground evenly in every part, that when you ſtand to rake it, the feet will not ſink in holes, in which the ſeed would be unavoidably drawn in raking; therefore, as ſoon as the ſeed is ſown, and trodden in as above, rake the ground over evenly with a large wide-teethed rake, either a wooden or iron one; raking once in a place is ſufficient, and as you go on trim off all large ſtones, and the work is done.

The ſeed being thus ſown, it, if good, will ſoon germinate, and the plants will appear in fifteen or twenty days, and ſometimes in a little leſs, or longer time, according to the ſeaſon of ſowing, nature of the ſoil, and temperature of the weather. When they are two or three inches high, they muſt be thinned to ſeveral inches diſtance, and cleared from weeds, agreeable to the following directions.

*Culture of the Plants.*

When the young plants are come up about two or three inches high, they ſhould be thinned to about ſix, eight, or ten inches diſtance, according to the ſize you intend they ſhall grow, and at the ſame time muſt be well cleared from weeds.

This work may either be performed by hoe or hand; but hoeing is not only more expeditious, as by looſening the ſurface of the earth about the young plants, it will prove a very eſſential ſervice in promoting their progreſs of growth. A ſmall hoe two or three inches wide ſhould be uſed; and dry weather ſhould be choſen for performing the work, that the ſuperabundant plants and weeds, as they are hoed down may die, for if done in moiſt weather, many would ſtrike root as they lie, and grow again. In the courſe of the work, be careful to thin the plants regularly to five or ſix inches diſtance at leaſt, which may be ſufficient, if the Carrots are deſigned to be uſed while young, and thinned out by degrees for uſe; but if intended to have them ſtand to grow to full ſize, hoe them at once to eight or ten inches diſtance, ſingling out the moſt promiſing to ſtand, and leave no where two or more together; obſerving to cut up all weeds, and ſtir every part of the ground between all the ſtanding plants.

In a fortnight, or three or four weeks after, as you ſhall ſee occaſion, run over them again with a hoe, to cut up any ſtraggling ſuperfluous plants that eſcaped you in the firſt hoeing, cutting up alſo all weeds, and the plants will ſoon after cover the ground, and require no farther culture.

In a month, or five or ſix weeks after the firſt hoeing, you may expect young Carrots fit to draw, which, if much wanted, may begin drawing when they are the ſize of your little finger; beginning with thoſe which were left cloſe on purpoſe for thinning, and thin them out for the table as they are wanted, in a regular manner, ſo as the remainder may have room to arrive at full growth.

But when it is deſigned to begin drawing Carrots for table when quite young, it is adviſeable, excluſive of the main crop, to ſow a piece purpoſely for drawing; and when fit to hoe, thin them only four or five inches diſtance, and in May or June, when of due ſize for the table, by a gradual thinning out the largeſt for uſe, the others will gain more and more room daily; and thus a piece of Carrots may be continued in occaſional drawing till the main crop is arrived nearly at full growth in Auguſt and September, and which may be taken up clear as they come to hand.

Therefore, to have the principal crop of Carrots as fine as poſſible, they, when fit for hoeing, ſhould be hoed to the full diſtance at firſt, of eight or ten inches, as before obſerved, and ſuffer them to ſtand until Auguſt or September, before you begin drawing, when they will be long, large, and of handſome growth, and in October or beginning of November will be done growing, and ſhould be then taken up and laid in ſand for winter, as hereafter directed; which, where there is convenience to lay them, is the only method by which Carrots can be preſerved in due excellence during that ſeaſon.

Carrots deſigned for market ſhould, during ſummer and autumn, whilſt they remain in the ground and have leaves, be waſhed, bound in bunches by their ſaid leaves, ſpreading the roots or Carrots themſelves fan-faſhion, twelve or eighteen, according to their ſize, in each bunch, which in the London markets ſell from about eighteen pence to three or four ſhillings per dozen of bunches, according to the early or late period of the year, and ſize of the Carrots.

But in winter, as being devoid of tops, they are commonly brought looſe in maunds or other large baſkets, and ſold by the baſket, or, if large, by the ſcore of roots.

*Preſerving them in Sand during Winter.*

To preſerve Carrots in good perfection through the winter, the full-grown crops ſhould be taken out of the ground in November, when they have done growing, and the leaves begin to turn yellow and decay; and lay them in ſand in a dry place out of the wet, and the reach of froſt.

This is neceſſary for theſe reaſons, firſt, that if permitted to remain in the ground in winter, they would be attacked by vermin, and become cankery and rotten, and in moiſt fat ſoils will often waſte away to nothing: likewiſe, if they remained in the ground in winter, hard froſts prevent you digging them up when wanted; but by taking the roots out of the ground in autumn, they may be preſerved perfectly ſound till March or April following, and will be ready for uſe in all weathers.

They ſhould be taken up in dry weather, with a three-tyned fork, and ſpread regularly on the ground for a few hours to dry; then cut their leaves off cloſe, and clear off all adhering earth, and carry them into a dry ſhed or other room, where they may be ſheltered from wet and froſt; there lay them in dry ſand, firſt laying ſome ſand, then a layer of Carrots, then more ſand, and ſo proceed alternately, ſeveral layers one upon another, and as wide and long as convenient, in proportion to the quantity of roots to be thus preſerved; covering the whole half a foot thick with ſtraw.

By the above practice Carrots may be preſerved in fine condition till April, both for family uſe and market.

Vaſt quantities of Carrots, preſerved as above, are brought to London every winter from Sandwich in Kent; the grounds adjacent being of a ſandy nature, is famous for producing the largeſt Carrots in England, ſome of which I have ſeen of a prodigious bulk; they are generally brought up by water, and depoſited in the warehouſes in Thames-ſtreet and Tooley-ſtreet, and places adjacent near London bridge, and there ſold by the buſhel, the price commonly a ſhilling or eighteen pence.

It is worth while to purchaſe ſome of theſe for ſeeds.

*Raiſing them early in Hot-beds.*

Young Carrots may be obtained at an early ſeaſon by aid of hot-beds; therefore if you omitted an autumnal ſowing in the full ground, for early ſpring ſervice, or that thoſe are damaged in winter, recourſe may be had in January or early in February to a ſowing on a hot-bed, either under frames or occaſional ſhelter of mats.

Make the hot bed of hot dung, four feet wide, as long as convenient, and two feet high, and directly frame it, and put on the mold eight or ten inches deep, or for want of frames, may arch it with hoops to be covered with mats, firſt earthing the bed the above depth with light rich mold, and fix boards or a wreath of large ſtraw bands round upon the edge of the bed on the top of the dung to keep up the outſide earth, or it might be banked up cloſely on each ſide and end with moiſt ſoil, as practiſed for aſparagus hot-beds: then having levelled and ſmoothed the earth for the reception of the ſeed, ſow it evenly on the ſurface, and beat it lightly down with the back of the ſpade, and then ſift ſome fine mold over it a quarter of an inch thick: this done, arch the bed over with hoops, and every night and all ſevere weather cover it with mats, or, if you uſe a frame and glaſſes, the plants muſt be allowed the full air every mild day, by ſhoving off the lights; for the plants muſt not be kept cloſe, otherwiſe they would draw up weak and never ſwell at root, ſo muſt only be covered principally on nights, and very ſevere or cold cutting weather.

When the plants are come up, and have two or three leaves an inch high, thin them by hand to three inches diſtance, which will be room enough, as they will be moſtly drawn off for uſe while quite young.

They may be greatly forwarded in growth, by lining the bed on each ſide with hot dung, in a fortnight or three weeks after it is firſt made, and ſo repeat it once or twice more, according as the heat declines.

By this practice of raiſing Carrots in hot-beds, a few may be obtained for variety, a month at leaſt ſooner than any in the natural ground.

*Raiſing them in Fields.*

Field culture of Carrots is ſometimes practiſed for feeding cattle, and ſometimes in large quantities for the ſupply of markets, and

either of which differs but little in culture from that in gardens, only the ground is generally prepared by ploughing and harrowing, inſtead of digging and raking, and the proper time for ſowing is March.

The ground ſhould be naturally light, looſe, of tolerable depth, and in good heart, as obſerved in the garden culture, and ſuch that have been in tillage before; and if it has been dunged the preceding year, it will be a particular advantage; otherwiſe if the land is poor, ſome thoroughly rotten dung may be ſpread over the ſurface, and ploughed in. The ground ſhould be ploughed fifteen or eighteen inches deep, if the depth of good ſtaple will admit, which is effected by double ploughing, i. e. ploughing twice in the ſame furrow; and two different ploughings at leaſt is neceſſary, but if three, it will be much the better, that is, the firſt ſhould be in the beginning of winter, turning it up in high ridges; the ſecond is proper in January or beginning of February, acroſs ways the firſt; and the third and final ploughing ſhould be in March, and ſhould then be well harrowed to break the clods, and ſmooth the ſurface for the reception of the ſeed: this is to be ſown in the broad-caſt way, allowing a pound and half to an acre, mixing ſome ſand or dry mold with the ſeeds, to enable you to ſcatter them more regularly, as in the garden culture. As ſoon as they are ſown, harrow them in with a light harrow, and afterwards, when the ſurface is dry, roll the ground with a wooden horſe roller to ſmooth the ſurface, whereby the ſeed will be more effectually covered, and the plants will riſe more evenly.

When the Carrots are come up about three inches high, they muſt be hoed in dry weather, to thin them and deſtroy weeds; having a five or ſix-inch hoe, cut out the plants to eight or ten inches diſtance, ſtirring all the ground, and cut up all weeds; and in three or four weeks after, if weeds make their appearance, run over them again with the hoe, and they will require no further culture.

They will be grown to a large ſize in Auguſt and September, and be then fit for uſe; but if they are deſigned chiefly for winter eating, they ſhould ſtand till November, then dug up, and laid in ſand, to preſerve them, as directed for the garden crops.

*Saving the Seed.*

To ſave Carrot ſeed, you may either leave ſome of the main crop in the ground in autumn, at a foot diſtance, for that purpoſe; or, in ſpring, plant out a quantity of the fineſt of thoſe which were taken up in autumn, and preſerved all winter in ſand.

But thoſe which have been taken up and preſerved in ſand are preferable, eſpecially for one thing; the roots being out of the ground, you can readily ſee and judge of their goodneſs, ſo as to ſelect only ſome of the handſomeſt for planting, making choice of ſuch whoſe tops are not cut too cloſe to ſpoil the ſhoot for the flower-ſtalk; they ſhould be planted in February, in rows two feet diſtance and one foot apart in the lines, planting them perpendicularly and wholly into the ground about half an inch over their crown; they will readily take root, and ſhoot up flower-ſtalks, and require no other culture than hoeing occaſionally to deſtroy weeds.

They will ſhoot up into ſtalk in April and May, be in full flower in June, and ripen ſeeds in Auguſt, which ſhould then be cut in dry weather, and ſpread in the ſun and air a few days till thoroughly dry, then threſh it out, and put it up in bags.

This ſeed will ſometimes retain its growing property two or three years; however, never depend on any but one year old ſeed for any principal crop, nor ſhould the ſeedſmen ſerve their cuſtomers with any that is older, as I am ſure it would prove a great diſappointment.

DELPHINIUM, Dolphin-flower, commonly called Larkſpur.

The plants are hardy, herbaceous, flowery annuals and perennials, of upright growth, from about a foot and a half to four feet high, garniſhed with finely-divided leaves, and terminated by long ſpikes of pentapetalous flowers.

Claſs and order, *Polyandria Trigynia.*

*Characters.*] CALIX, none. COROLLA, five irregular petals, the upper one extended at the baſe into a tubular obtuſe tail, and a bifid nectarium in the centre. STAMINA, many filaments, and ſmall erect antheræ. PISTILLUM, three oval germina, three ſtyles, and reflexed ſtigmas. PERICARPIUM, three united unilocular capſules, and many angular ſeeds.

There are about four ſpecies of *Delphinium* common to the Engliſh gardens, all of them conſidered as flowery plants, two of which are annual, and the reſt perennial, viz.

1 DELPHINIUM *Ajacis.*

*Ajacis, or Unbranched Annual Larkſpur.*] Delphinium, with an upright, ſimple, unbranching ſtalk, two or three feet high, garniſhed

niſhed with finely-divided leaves, and terminated by an erect long ſpike of flowers, having monophyllous nectariums, and of different colours in the varieties.

*Varieties are*] Unbranched Annual Larkſpur, with ſingle and double blue flowers—Single and double purple flowers—Single and double red flowers—Single and double white flowers—Single and double ſilver-coloured flowers—Single and double violet-coloured flowers—Single and double aſh-coloured flowers—Single and double ſtriped flowers.

All theſe varieties of *Delphinium Ajacis*, or Unbranched Larkſpur, riſe with a ſimple ſtem, ſcarce emitting any ſide branches; and each ſtalk is terminated by a very long, erect, flowery ſpike, compoſed of numerous cloſely-placed flowers, which exhibit a very ornamental appearance in June, July, and Auguſt, ſucceeded by plenty of ripe ſeed in September.

[2]DELPHINIUM *Ambiguum.*

*Branched Annual Larkſpur.*] Delphinium, with an upright very branchy ſtalk three feet high, long finely-divided leaves, and all the branches terminated by long aſcending ſpikes of flowers, having monophyllous nectariums, and of different colours in the varieties.

*Varieties.*] Nearly the ſame in colour as the Unbranched Larkſpur, and of which are ſingles and doubles.

All the varieties of this ſpecies ſend out many branches horizontally, which turn upward toward the extremity, the flowers large, but rather thinly placed in the ſpikes; they all, however, form a very ornamental variety in the borders, &c. in July and Auguſt, ſucceeded by plenty of ſeeds in autumn.

[3]DELPHINIUM *Elatum.*

*Tall Perennial Bee Larkſpur.*] Delphinium, with ſeveral upright ſtalks four or five feet high, adorned with hairy leaves, cut into many broad expanded ſegments, and all the ſtalks terminated by long erect ſpikes of blue flowers, having diphyllous nectariums, with bifid lips, bearded at the top.

[4]DELPHINIUM *Grandiflorum.*

*Dwarf, Grandiflorous, Perennial, Bee Larkſpur.*] Delphinium, with upright branchy ſtalks a foot and a half high, ſmooth leaves, compoſed of many narrow ſegments, ending in ſeveral points, and towards the upper part of the ſtalks large azure-coloured flowers ſingly, having diphyllous nectariums, with entire lips, appearing in July, ſucceeded by ſeed in autumn.

Of theſe four ſpecies the two firſt and varieties are univerſally annual, but the third and fourth are perennial in root and annual in ſtalk, which riſe in ſpring, and decay in autumn.

The names Larkſpur and Bee Larkſpur are derived from the reſemblance of the tail of the corolla to the ſpur of a lark's foot; and from the nectarium of the perennial ſorts to a bee.

The flowers of all the ſorts are compoſed of five unequal petals, one at top, two ſideways, and two at bottom, and a central nectarium; they are moderately large, numerous, and moſtly collected into erect ſpikes, and are very conſpicuous and ornamental.

All the ſorts are very ornamental furniture for the borders and other compartments of the pleaſure-ground, and are ſo hardy that they proſper in any common ſoil and expoſure, and all the ſorts are raiſed abundantly from ſeed in the full ground, as directed below.

*Propagation and Culture.*

The two annual ſorts and varieties are raiſed from ſeed ſowed annually in autumn, i. e. September or October, or early in ſpring, in patches in the places where the plants are to flower, for they do not ſucceed by tranſplantation; obſerving, that thoſe of the autumn ſowing grow ſtronger, flower earlier, and the flowers are generally larger and more durable than the ſpring-ſown plants. It is alſo however proper to ſow ſome in ſpring, in February or March, to continue a longer ſucceſſion of bloom. The method of ſowing them is, dig with a trowel ſmall patches about nine inches diameter in different parts of the borders, towards the middle, or alſo in the fronts of the ſhrubbery clumps, and in each ſuch patch ſow eight, ten, or twelve ſeeds a quarter of an inch deep; and when the plants are an inch or two high, thin thoſe of the unbranched ſorts to about ſix or eight in each patch, and of the branched kinds, to three or four in each place, which is all the culture they require, and in which order of cultivation they will make a fine appearance.

But when intended to have a grand ſhew of them in beds by themſelves, they are commonly ſowed in drills, forming the drills lengthways the beds a foot aſunder, and half an inch deep, ſo ſcatter the ſeeds thinly along the drills, and rake the earth over them evenly; but the unbranched kinds are the beſt adapted for this mode of culture.

Or they may be ſowed broaſt-caſt on the ſurface of the bed, and raked in, and when the

the plants are an inch or two high, thin them by hand or hoe, to three or four inches diſtance, but the branched kinds to treble that diſtance.

To preſerve the varieties of theſe two annual ſpecies from degeneration, all thoſe of bad colours, and that are very ſingle, ſhould be pulled out as ſoon as they ſhew bloom enough to diſcover their properties; for their farina would impregnate the fine ſorts, and cauſe a degeneracy.

The perennial ſorts.—Theſe are alſo raiſed plentifully from ſeeds ſown in autumn or ſpring, in a bed or border of common earth for tranſplantation. Sow them on the ſurface, and rake them in, and when the plants come up, hand-weed them occaſionally, and thin them to three or four inches diſtance, to remain till October or November; then plant them out where they are to remain to flower: their roots will endure many years, increaſe in ſize, and the larger they are, the greater number of flower-ſtalks they produce, ſo as to exhibit a large ſhew of bloom.

DENTARIA, Toothwort, or Tooth Violet (*Dentaria.*)

This genus furniſhes three hardy, herbaceous, flowery perennials, producing annual ſtalks twelve or eighteen inches high, adorned with many-lobed leaves and ſpikes of quadripetalous cruciform flowers.

Claſs and order, *Tetradynamia Siliquoſa.*

*Characters.*] CALIX, four oblong, oval, deciduous leaves. COROLLA, four cruciform petals. STAMINA, four long and two ſhort filaments, and erect heart-ſhaped antheræ. PISTILLUM, an oblong germen, thick ſtyle, and blunt ſtigma. PERICARPIUM, a long, taper, bivalvular, bilocular, pod, and many roundiſh ſeeds.

The ſpecies are,

[1]DENTARIA *Pentaphyllos.*

*Five-lobed Dentaria.*] Dentaria, with upright ſtrong ſtalks a foot and a half high, garniſhed with five-lobed digitate leaves, and terminated by looſe ſpikes of bluſh-cloured flowers.

[2]DENTARIA *Enneaphyllos.*

*Nine-lobed Dentaria.*] Dentaria, with upright ſtalks a foot high, garniſhed with ternate trifoliate leaves, being compoſed of nine lobes by threes, and the ſtalks crowned by branches of purpliſh flowers.

[3]DENTARIA *Bulbifera.*

*Bulbiferous Seven-lobed Dentaria.*] Dentaria, with ſlender ſtalks a foot high, the lower leaves pinnated and ſeven-lobed, the upper ones ſimple, and the ſtalks bearing bulbs at their ſides, and the top crowned by cluſters of purple flowers.

The flowers of all theſe three ſpecies are compoſed of four cruciform obtuſe petals, and are collected into ſpikes or cluſters at top of the ſtalks, appearing in ſummer, and are ſucceeded by plenty of ſeed.

The plants are all of the flowery tribe, perennial, hardy, and delight moſt in ſhade; they are therefore proper furniture for the borders of ſhady walks, and ſuch like departments.

They are propagated by ſeed, and by parting the roots.—Sow the ſeed in autumn ſoon after it is ripe, or early in ſpring, in a ſhady border of light earth, and when the plants are three inches high, may be planted where they are to remain, and they will flower the year following. By parting the roots, it may be done in October or November, or early in ſpring.

The bulbs produced on the ſides of the ſtalks of the *Dentaria bulbifera*, taken off and planted, readily become plants.

DIANTHUS, Clove Gilliflower, Carnation, Pink, Sweet William, &c.

This genus furniſhes a grand collection of herbaceous, beautiful, flowery perennials and biennials, of hardy growth, for the pleaſure-ground, all of them fibrous-rooted, crowned with leaves all the year, ſending up flower-ſtalks annually from one to three feet high, adorned at top with very conſpicuous, pentapetalous, ſolitary, and aggregate flowers.

Claſs and order, *Decandria Digynia.*

*Characters.*] CALIX is long, cylindrical, indented into five parts at top, ſcaly at the baſe, and perſiſtent. COROLLA is in its ſingle ſtate, pentapetalous, with long narrow claws the length of the calix, but the limbs broad, plane, and their edges crenated. STAMINA, ten long filaments, and oval, oblong, compreſſed antheræ. PISTILLUM, an oval germen, two ſtyles, and recurved acuminated ſtigmas. PERICARPIUM, a cylindric unilocular capſule, four-parted at top, and many compreſſed, roundiſh, angulated ſeeds.

There are many ſpecies of *Dianthus*, but not more than four that have any conſiderable merit as garden-flowers, each of which furniſhing ſome beautiful varieties.

For diſtinction ſake we ſhall treat of them under three different heads; firſt, the Gilliflower or Carnation kinds,—ſecond, all the Pink

Pink kind,—and third, all the Sweet William tribe; all under the generical title of *Dianthus*.

*First Head. The Gilliflower or Carnation kinds.*

There is but one ſpecies of Gilliflower or Carnation, but which admit of a profuſion of moſt elegant varieties, all very ornamental flowery plants, for the embelliſhment of the pleaſure-garden, flowering beautifully in July and Auguſt, ſucceeded by abundance of ſeed in autumn.

The ſpecies is,

DIANTHUS *Caryophyllus.*

*Caryophyllus, or Clove Gilliflower, including all the varieties of Carnation.*] Dianthus, with many ſhort trailing ſhoots from the root, garniſhed with long, very narrow, evergreen leaves, and amidſt them upright ſlender flower-ſtalks, from one to three feet high, emitting many ſide-ſhoots, all of which, and the main ſtalk, terminated by large ſolitary flowers, having ſhort oval ſcales to the calix, and crenated petals.

The varieties of this are very extenſive, and unlimited in the diverſity of the flowers.

*Principal varieties are,*

*Common Clove Gilliflower*—having a large, dark, red, ſweet-ſcented flower, ſmelling fragrantly like cloves; hence it derived the name, and of which there are—Single Clove Gilliflower—Double Clove Gilliflower.

*Carnation, ſometimes called Coronation (Coronarius*—having a reddiſh ſingle and double flower—Variegated red and white ſingle and double flower—Variegated red, purple, and white ſingle and double flowers—Variegated red, ſcarlet, purple, and white ſingle and double flower—Variegated red, or purple above, and white underneath, ſingle and double flowers;—and innumerable other intermediate varieties.

But theſe varieties (Variegated Carnations) are by the floriſts divided into four principal claſſes, according to their different modes of variegation, viz.

Flake Carnations—having only two principal colours, diſpoſed in broad flakes or ſtripes quite through the petals.

Bizarre Carnations—having three or four different colours, red, purple, ſcarlet, &c. in different ſhades, variouſly diſpoſed in irregular ſpots and ſtripes.

Piquette Carnations—having always a white ground, pounced or finely ſpotted with red, ſcarlet, purple, or other colours.

Painted Lady Carnation—having the petals a bright red, or purple above, and entirely white underneath.

Each of the above four principal claſſes, though tolerably permanent, admit ſeparately of innumerable varieties, formed, both in reſpect to the luſtre of the different colours, &c. as well as the different modes or diſpoſitions of the ſtripes, ſpots, and other diverſities, in being more or leſs ſtriped with larger or ſmaller ſtripes, or with different colours in the ſame ſtripe, or all of one colour, the ſame is alſo obſervable in the ſpotted or pounced flowers, by the ſpots being either more frequent, or thinly ſcattered, or large or ſmall, and ſuch like variegations; and by which the floriſts form new varieties, acquired by raiſing ſome every year from ſeed; for from the ſeed of the varieties of each reſpective claſs indefinite numbers of new ones are annually gained, varying in ſome particular circumſtances as above, from any that have before appeared, ſo greatly do they vary from ſeed. But it muſt be remarked, that out of a great number ſo obtained from ſeed, there may, probably, be but few that poſſeſs the requiſite properties by which floriſts diſtinguiſh a fine Carnation. However, all good new varieties, of the above four principal claſſes, obtained among profeſſed floriſts, are generally dignified with the name of ſome great perſonage, or that of the perſon who firſt raiſed them, or that of the place where they were raiſed; ſo that including the different parts of the kingdom, there may be many hundred different varieties, known in different places by different titles, as above, that it will be impoſſible to enumerate them here; obſerving, however, that all of them belong principally to one or other of the above claſſes; and that being firſt of all obtained accidentally from ſeed, they are afterwards propagated, and continued only by layers, &c. for ſow the ſeed of any particular ſort, it is a hundred to one if any prove exactly like the parent; but by layers, every one retains all the properties of the mother plant. See their *Propagation*.

The flowers of this ſpecies and reſpective varieties, are, in their characteriſtic or ſingle ſtate, compoſed of five petals, but in the double flowers the petals are numerous, and continued quite to the centre; the doubles are alſo larger, and conſiderably more beautiful, and theſe only ſhould be principally cultivated, which being all firſt obtained accidentally from ſeed, they are continued and increaſed at pleaſure by layers.

The

The doubles are ſometimes amazingly large, meaſuring frequently three or four inches diameter over the crown, eſpecially thoſe ſorts called burſters.

But whole-blowers and burſters are common to moſt of the varieties, more particularly the flakes and bizarres.

The whole-blowers are ſuch whoſe calix, or outer cup, is of long and of equal growth, and opens only at top regularly each way, for the free and equal expanſion of the petals all around; and the flowers of this ſort, though rather ſmaller than the burſters, are always more regular in their natural expanſion, and require conſiderably the leaſt trouble in managing their bloom.

Burſters are ſuch, whoſe cup is large, and ſwoln as it were, and is very apt to burſt open on one ſide, and the petals thereby break out of compaſs, and the flowers become very irregular; but by care in aſſiſting it in due time, by tying and opening the calix a little on the contrary ſide, it may be made to blow regular, and will be very large and handſome.

But the whole-blowers are the beſt calculated for thoſe who have but little time to ſpare, as they will always blow regularly, either in pots or the borders without any attendance.

The properties required to form a good Carnation are, that the ſtem or flower-ſtalk be moderately tall, i. e from about eighteen to thirty inches high, of proportionable ſtrength all the way up, and at the top ſo firm as to ſupport the flower erect, or at leaſt without nodding or hanging much downward. That the flower be large and double, i. e. have numerous petals quite to the very centre, theſe long, broad, and regularly ſpreading; and that when the flower is fully blown, it may be gradually riſing in the middle in a ſpherical manner, and the whole expanding ſo regularly, that the circumference or outer rim be perfectly circular. The colours ſhould be ſtrong, lively, and elegant, the ſtripes and other variegations regular in every part, that no great diſproportion may appear in the diſpoſition of the colouring throughout the petals of the ſame flowers. Theſe properties are principally expected in the fine varieties in pots, deſigned for ſtage flowers.

*Their Uſe in Gardens, &c.*

The fine varieties of this beautiful flower are in univerſal eſteem among floriſts and all curious gardeners, and are of the liſt of prize flowers, that being raiſed in their fulleſt perfection, are carried to floriſts feaſts, to ſhew for a prize, which practice is ſtill much in vogue in many parts; and that the flowers uſually brought to ſuch places, being the production of many different artiſts, according to their utmoſt ſkill, there are often very curious exhibitions of them, in great variety, ſurpriſingly large and fine.

The fine varieties are commonly cultivated in pots, for theſe reaſons—firſt, that they may be readily moved to occaſional protection of a frame or awning of mats, &c. from ſevere froſt in winter; for although the plants are hardy enough to live through the winter fully expoſed, yet, in ſevere ſeaſons, they are ſometimes ſo much cut, that they ſhoot but weakly; but by protecting them from the rigours of hard froſts, they are preſerved in vigour, and they will conſequently be better prepared for ſhooting, and will flower in greater perfection. Secondly, it is proper to retain the fine varieties in pots, in order that, when in bloom, they may be placed upon a raiſed ſtage, covered at top, calculated both to ſhew the flowers to more advantage, by being raiſed two feet from the ground, and by the top being covered, it defends them from the ſcorching rays of the noon-day ſun, and from violent rains, &c. which would greatly impair their beauty, and haſten their decay.—And laſtly, by placing the pots of plants upon a ſtand or ſtage, having the poſts of which ſurrounded at bottom by ſmall ciſterns or pans of water, prevents creeping inſects from coming at the poſts thereof to aſcend to the flowers, particularly ear-wigs; for theſe miſchievous vermin would otherwiſe get into the boſom of the flower, and gnaw the bottom of the petals, that they would all drop out of the calix.

But a due quantity of the more common ſorts ſhould be planted to adorn all the flower-borders and the other conſpicuous compartments of the pleaſure ground; for they will thrive in any common ſoil of a garden, and will flower abundantly in tolerable good perfection; and where there are ſeveral different varieties, they will exhibit a delightful ornamental appearance for ſix weeks, i. e. from the beginning or middle of July until the latter end of Auguſt, being their general ſeaſon of flowering.

Pots of theſe plants, as alſo of pinks and ſweet-williams, may, by way of curioſity, be brought to bloom early in ſpring, by placing them

them in a hot-houſe or forcing-frame in January, February, or March. See FORCING-FRAME.

*The Soil proper for their Culture.*

With reſpect to ſoil, although all the varieties grow freely in almoſt any common garden earth, and in which produce beautiful flowers, yet they are generally ſuperior in that of a light loamy nature, and of which kind of ſoil floriſts generally prepare a compoſt for their fine varieties intendedfor pots as follows:

Provide a quantity of loamy earth, of a light ſandy temperature, from an upland or dry paſture field or common, taking the top ſpit turf and all, which muſt be laid in a heap for a year, and turned over frequently, as directed in the article COMPOSTS; and is then to be mixed with about one third of rotten dung of old hot beds, or rotten neat's dung, and a little ſea-ſand, forming the whole into a heap again, to lie three, four, or ſix months, and will be then excellent for uſe; and if one parcel or heap was mixed with one of theſe kinds of dungs, and another parcel with the other, for different ſeaſons, it will make a change, and may be found very beneficial in promoting the ſize of the flowers.

The above compoſt is as good as can be for thoſe plants, either in pots, or to form into beds.

This compoſt, or any other earth you may uſe for this purpoſe, ſhould not be ſifted, but only well broken with the ſpade and hands. See COMPOSTS.

*Their Propagation by Seed.*

By ſeed.—When great quantities of the plants of this ſpecies are required either to furniſh large grounds, or for market, or that it is intended to raiſe new varieties, it is eaſily effected by ſowing ſome ſeed annually in ſpring, in common earth, and from which the plants will riſe abundantly; and as to varieties, you may always expect ſeveral new flowers of good properties from the plants of each ſowing, and poſſibly not one exactly like thoſe from which the ſeed was ſaved; and that from the ſeed of the fineſt varieties there will probably be many very indifferent, as well as good flowers, ſome ſingle, ſome double, though the ſingles are always conſiderably more numerous than the doubles; but it is from the doubles only we are principally to ſelect varieties for our purpoſe, which are marked when in bloom, to lay for propagation, and the moſt capital of which potted for the ſtage, &c. and the others will do for the common flower-borders.

The ſeaſon for ſowing the ſeed, is any time from about the 20th of March to the 15th of April.

It grows freely in a bed or border of common earth, of the quality of any light rich kitchen-garden mold; though curious perſons often ſow the fine ſorts in pots or boxes, for the convenience of moving them in hot weather, to have only the morning ſun; however, you will ſucceed in either method; and as to ſowing on a bed or a border, may either ſow it on the ſurface, and rake it lightly in, or may firſt rake the ſurface ſmooth, then ſow the ſeed on the ſurface, and ſift over as much light earth as will cover it a quarter of an inch deep: obſerve alſo the ſame method in ſowing it in pots or boxes, giving moderate refreſhments of water in dry weather; and the ſeed will germinate more freely, and the plants riſe regular, and take a free growth.

The plants generally come up in a month after ſowing: give occaſional waterings and weeding, and in July they will be fit to prick out into nurſery-beds, which prepare in an open ſituation three feet wide; and taking advantage of moiſt weather, prick the plants therein four inches apart, and finiſh with a general watering, which repeat occaſionally till the plants have taken good root. Here let them remain till September, when they will be ſo well advanced in growth, as to require more room, and ſhould then have their final tranſplantation into other three-feet wide beds of good earth, in rows lengthways the bed, nine inches aſunder, and the ſame diſtance in the lines, placing them in the quincunx order; and here they are finally to remain all winter, and until they flower, and have obtained an increaſe of the approved varieties of doubles, by layers: and until which periods, all the culture they require is, that if the winter ſhould prove very ſevere, an occaſional ſhelter of mats, during the hardeſt froſt, will be of much advantage, though not abſolutely neceſſary; and in ſpring looſen the ground between them with an hoe, keep them always clear from weeds, and when their flower-ſtalks advance, tye them up to ſticks, eſpecially all thoſe that diſcover by their large flower-pods to be doubles.

They will flower in June, July, and Auguſt, at which times, as ſoon as the ſingles

and doubles are diſtinguiſhable, all the ſingles may be drawn out to make room for their betters, the double varieties.

When theſe are fully blown, examine their properties; the fineſt may be marked for ſtage flowers, and the others as furniture for the borders; all of which may be encreaſed by layers the ſame year, to treble or perhaps ſix or eight times their number or more, ſince each good plant will furniſh from three or four, to ten or twelve ſhoots from the bottom proper for laying, each of which takes root, and becomes a new plant the ſame ſeaſon; and each of theſe again will in their turn furniſh the like number of ſhoots the following years, for the ſame work of propagation; and ſo each variety may be thus annually increaſed to great numbers, and every plant ſo obtained of each reſpective variety, retains all the properties exactly of the mother plant, which is never the caſe of thoſe propagated by ſeed; though from ſeedlings all our fine flowers are always firſt obtained.

Therefore as ſoon as the ſeedlings ſhew bloom, proceed to the work of propagation by layers of all the doubles among them, or at leaſt as many of them as you ſhall approve; and the following is the method of laying them.

*Their Propagation by Layers.*

By layers.—We obſerved above, that the propagation of theſe plants by layers is the only method by which we can with certainty continue any particular variety, either new or old; ſince every layer, becoming a new plant, always produces a flower exactly in ſize, colour, and character, as that of its parent; and that being layed in ſummer, they form roots in ſix weeks, and be fit to tranſplant, and each produce flowers the year following, as well as each furniſh a farther ſupply of ſhoots for more layers.

The proper parts for layers, are thoſe leafy ſhoots ariſing near the crown of the root, which, when about five, ſix, or eight inches long, are of a proper degree of growth for layers.

The general ſeaſon for this work is June, July, and beginning of Auguſt, as then the ſhoots will be arrived at a proper growth for that operation; and the ſooner it is done, after the ſhoots are ready, the better, that they may have ſufficient time to acquire ſtrength before winter: thoſe layed in June and July will be fit to take off in Auguſt and September, ſo will form fine plants by October.

The method of performing the work is as follows.—Firſt provide a quantity of ſmall hooked ſticks for pegs, three or four inches long, with which to peg the layers down to the ground; alſo get ready, in a barrow, a quantity of light rich mold, to raiſe the earth, if occaſion, around each plant; and provide alſo a ſharp penknife. Having all theſe ready, then proceed to the work of laying; firſt ſtrip off all the leaves from the body of the ſhoots, and ſhorten thoſe at top an inch or two evenly, and then fixing upon a ſtrong joint about the middle of the ſhoot, and on the back or under ſide thereof, cut with your penknife the joint half way through, directing your knife upward, ſo as to ſlit the ſhoot up the middle almoſt to the next joint above; by which you form a kind of tongue, on the back of the ſhoot, obſerving that the ſwelling ſkinny part of the joint remaining at the bottom of the tongue muſt be trimmed off, that nothing may obſtruct the iſſuing of the fibres, for the layers always form their roots at that part; this done, looſen the earth around the plant, and, if neceſſary, add ſome freſh mold, to raiſe it for the more ready reception of the layers; then with your finger make a hollow or drill in the earth to receive the layer, which bend gently down horizontally into the opening, raiſing the top upright, ſo as to keep the gaſh or ſlit part of the layer open, and with one of the hooked ſticks peg down the body of the layer, to ſecure it in its proper place and poſition, ſtill preſerving the top erect, and the ſlit open, and draw the earth over it an inch or two, bringing it cloſe about the erect part of the ſhoot; and when all the ſhoots of each plant are thus layed, give directly ſome water to ſettle the earth cloſe, and the work is finiſhed, repeating the waterings often in dry weather; and in five or ſix weeks the layers will have formed good roots, when they ſhould be ſeparated with a knife from the old plants, and planted in beds or pots, as may be convenient, in the following manner.

*Taking off, and tranſplanting the Layers.*

The layers, as above obſerved, are generally well rooted in ſix weeks after laying, which you will obſerve by opening the earth a little, and examining the bottom, or root part, and if it has emitted plenty of fibres, they ſhould be taken off, and planted out ſeparately, to form diſtinct plants.

They

They muſt be cut or ſeparated with a knife from the old plant, gently raiſing them out of the earth with the point of a knife or trowel, ſo as to preſerve the fibres or roots of the layers as entire as poſſible; and when thus taken up, cut off the naked ſticky part at bottom cloſe to the root, and trim the tops of the leaves a little; they are then ready for planting, either into beds or pots, but rather into nurſery-beds of good earth, about ſix weeks, and then the fine ſorts may be potted; therefore chuſing a bed or border of rich light earth, let it be then neatly digged, and the ſurface raked ſmooth, and here plant the layers with a dibble, at ſix or eight inches diſtance, give directly a good watering, and repeat it, in dry weather, every day or two, for a week or a fortnight, when the plants will have taken freſh root, and begin to advance in growth.

In this bed let them take their growth till October, then thoſe of the fine varieties may be potted in ſmall pots (forty eights) for moving to occaſional ſhelter from hard froſts till ſpring, then tranſplanted into large pots to remain to flower; therefore, at the above-mentioned time in autumn, take up the layers of the prime ſorts from the nurſery-beds, with ſmall balls of earth about their roots, plant one in each ſmall pot, and give a moderate watering, and place them in a warm ſituation in the full air till November, then move them to occaſional ſhelter, as directed in their winter culture.

Some perſons plant the layers at once into large pots in autumn; but theſe are not ſo convenient to remove to ſhelter in winter, as ſmall pots, becauſe they take up much room in a frame, &c. beſides, by having the layers in ſmall pots all winter, when they receive hardly any growth, and tranſplanting them into large pots of freſh earth in ſpring, it proves very beneficial to the plants. See their *Spring Culture*.

The more common ſorts may either at the above time, in autumn, be tranſplanted into the borders or other compartments of the pleaſure-ground, where they are to remain to flower, or may be continued in the beds until ſpring; and then a due quantity may be diſpoſed in the borders, or retained in the ſame bed, for flowering, as may be convenient.

### *Their Winter Culture.*

In November the fine varieties in pots ſhould be moved to a ſunny ſheltered ſituation for the winter, and if placed in a frame, &c. to have occaſional protection from hard froſt, it will be of much advantage; therefore where there are any garden frames at liberty, the pots may be placed cloſe together therein, or if the bed is raiſed three, four, or ſix inches with light dry earth, ſand, or aſhes, and ſo plunge the pots in it to their rims, it will be a greater protection for their roots, covering them occaſionally with the glaſſes in hard froſts, &c. but for want of frames, a bed prepared as above, may be arched over with hoops, to be covered occaſionally with mats.

Under either of thoſe ſhelters the plants are to be covered with glaſſes or mats only in time of ſevere froſt and great ſnows; but muſt enjoy the full air in all open weathers, by having all covering entirely off, and a moderate froſt can no ways affect them, for if much covered, it would draw them up weak and tender. Do not however omit, in ſevere weather, to afford them the above ſhelter, which will preſerve the plants in greater health and vigour than if fully expoſed to all weathers during the winter.

Be careful alſo that the earth in none of the pots is rendered very wet by the hole at bottom being too cloſe ſtopped to detain the moiſture.

Thus continue your care of the potted plants till ſpring, and then ſhift them into large pots to remain to blow, as directed in their ſpring culture.

In reſpect to thoſe in the open beds, although they commonly ſtand the winter tolerably, yet if you have any ſpare frames, or the beds arched over, to be covered with mats or long dry litter in ſevere froſts, it will be of much advantage.

### *Their Spring Culture, ſhifting into larger Pots, &c.*

In the latter end of February, or ſome time in March, the layers in the ſmall pots, or ſuch as are in beds, and that you intend ſhall blow in pots, ſhould be tranſplanted with balls into the large pots, where they are to remain for flower.

The pots proper for their reception for flowering ſhould be ſixteens, but not leſs than twenty-fours; for they ſhould be nine or ten inches at leaſt in the clear at top, but if a foot the better, that there may be due room to lay the layers, at the proper ſeaſon, for a further increaſe, which is an eſſential point to be conſidered. The pots being ready, put ſome pieces of tile or oyſter ſhells over the holes

at bottom, and fill them half way with earth; then turn the plants out of the pots, &c. with the ball of earth about their roots, and after taking away a little of the earth around the ſides of the ball, place one plant in each of the large pots, filling up the vacancy round the ball with more freſh compoſt, bringing it alſo cloſe up about the body of the plant, which ſhould ſtand nearly as high as the rim of the pot; and finiſh each pot with a moderate watering.

Many perſons plant two plants in each large pot; but when there is only one, they flower ſtronger, make ſtronger ſhoots for layers, and there is more room to lay them.

The plants being thus potted, place them in a ſheltered ſunny ſituation in the full air, and in dry weather ſupply them with water twice or thrice a week, and here let them remain till they are conſiderably advanced, towards flowering, then the fine ſorts may be placed on the Carnation ſtage: where there is ſuch conveniencies obſerve as follow.

*Summer Culture, placing them on the Stage, and Management when in Bloom, &c.*

During dry warm weather continue the care of watering thoſe in pots every day or two. Likewiſe clear out all weeds, and at times lightly ſtir the ſurface to prevent the earth from binding, which will be beneficial to the plants, and preſerve an air of neatneſs.

In May and June the flower-ſtems of the plants will advance a-pace, when ſticks ſhould be placed for their ſupport, which ſhould be two feet and half, or a yard long, either round or ſquare, but perfectly ſtraight and tapering from the bottom; ſuch as are ſold about London at the lath-renders and turners, for nine-pence or a ſhilling per dozen; ſharpening the lower end, thruſt one down by every plant, to which tye the flower-ſtems in a neat manner, which repeat at different times, according as they advance in height.

In June or beginning of July the plants will be conſiderably advanced towards flowering, when thoſe intended for the ſtage ſhould be placed thereon, both to be out of the way of creeping inſects, particularly ear-wigs, which, as before obſerved, eat the petals off at their baſe, to the deſtruction of the flowers; ſo to prevent their depredation, the poſts or ſupporters of the ſtage ſhould be ſurrounded at bottom by ſmall ciſterns of water, as hereafter directed, that the vermin cannot come at the poſts, to creep up to the flowers; and that by placing the plants on a ſtage, having the platform eighteen inches or two feet high, the flowers are viewed to more advantage; and if there is erected an awning over the top, ſupported four feet above the platform, the flowers being hereby ſcreened from the vehement heat of the mid-day ſun, and defended from heavy rains, are continued much longer in beauty.

Some Carnation ſtages are conſtructed upon very elegant plans, both to render them uſeful and ornamental.

But as to the general conſtruction of a common Carnation ſtage, it is formed entirely of ſlight timber-work, thus—A boarded platform is erected, at eighteen inches or two feet height, formed by two ranges of planks, to contain two rows of pots lengthways, proportionable to the number intended to be placed thereon; and which is ſupported on poſts, ranged either in one row along under the middle of the platform, or in two ranges, one on each ſide; and over the top is erected a roof of open work, five or ſix feet high, to be covered with painted canvas, &c. for the protection of the flowers, ſupported either by a range of neat poſts on each ſide, or by one row, ranging along the middle between the planks of the platform, which is the moſt eligible; the roof may be formed either archways, or like the ridge of a houſe, having the arches or ſpars about a foot aſunder, and ſtiffened by thin ſlips of deal carried acroſs them the whole length of the ſtage; and the roof thus formed may be covered either with coarſe canvas painted white, or ſtrong brown paper painted the ſame colour with white lead, or with ſtrong white paper bruſhed over with linſeed-oil to render it proof againſt wet, or in default of either of theſe, may cover it with neat garden-mats, lengthways, either of which being deſigned only juſt to ſcreen the flowers from the ſcorching ſun and great rains, that their beauty may be continued as long as poſſible.

All the wood-work of the ſtage ſhould be painted white, both to preſerve it from the weather, and give it a more lively appearance.

In conſtructing Carnation ſtages, ſome are ſo curious as to contrive ſticks for the ſupport of the flower-ſtalks, fixed to the work of the ſtage, by means of ſmall neat rails carried along lengthways the ſtage, juſt over the place where each row of pots ſtand, and from which rails upright ſticks, half an inch thick,

thick, are carried to another ſuch rail above, placing them at ſuch diſtances, that there be two to each pot, and ſo train the flower-ſtems up to the outſide of the ſticks.

With reſpect to the ciſterns of water above mentioned, to ſurround the ſupporters of the ſtage, they are formed by earthen or leaden pans, about fifteen inches wide, and three or four deep, having a hollow or vacancy in the middle ſix inches wide, like a ſocket, to receive the poſts, and is formed by a raiſed rim in the middle, equal in height to that of the circumference; and the hollow or ſocket ſo formed is to receive the bottom of the poſts quite through to the ground, and the ſpace between the outer and inner rim is filled with water; ſo that each poſt ſtanding in the middle of ſuch a ciſtern, ſufficiently guards againſt creeping inſects, for they will not attempt to croſs the water.

Theſe ciſterns may be had at any of the potters that make garden-pots; and if you chooſe them of lead, every plumber knows their conſtruction.

But as making the above deſcribed Carnation ſtage may not be convenient to every one, I ſhall deſcribe one of a more cheap and eaſy conſtruction. Provide ſome flat earthen pans about fifteen or eighteen inches diameter, and three or four deep, which place by pairs oppoſite two feet apart, and ſix or eight feet between each pair lengthways; and in each of theſe pans, whelm a large garden pot bottom upward, and acroſs each pair of pots lay a flat piece of timber, two feet ſix inches long, and two or three inches thick; then having long planks, lay theſe acroſs the timbers lengthways, in two rows, and your ſtage is formed, then place two rows of pots upon the planks, and fill the pans with water, to keep off inſects.

For want of a covered ſtage to ſcreen the flowers, you may contrive a kind of ſmall umbellas or round-ſpreading caps, either of tin or ſtrong paper or canvas, nine or ten inches diameter, one for each plant, having a ſocket in the middle to receive the tops of the ſupport-ſtick; thoſe umbrellas which are formed of tin are the beſt, and may be had at the tin-ware ſhops; but if you make them of paper or canvas, firſt form little round frames, having the rim formed with ſlips of lead, wire, cane, &c. the above width, with croſs ſlips of the ſame materials, contriving a ſocket of lead or tin in the middle for the ſupport ſtick to go quite through, as juſt obſerved; and upon theſe frames paſte or ſow ſome ſtrong thick paper or canvas, which paint with oil-colour, that they may ſtand the weather; either of which covers are placed over the flowers by running the ſupport ſtick up through the hole or ſocket in the middle, and reſting the cap upon a piece of wire put acroſs the ſtick, at ſuch height from the flower as to ſcreen it effectually from the ſun and rains.

Give attention to continue to tye up neatly the flower ſtalks of the plants in general, as they advance in ſtature. When they are arrived at their full height, the curious in Carnations ſupport them erect at top with wires, having a ſmall eye or ring at one end, for the reception of the flower ſtalk, ſo put the other end into holes made in the ſupport-ſticks; theſe wires ſhould be five or ſix inches long, and ſeveral holes are made in the upper part of the ſticks, the firſt at the height of the bottom of the flower-pod, the others above that, an inch or two diſtant, and place the wires in the holes lower or higher, that the eye or ring may be juſt even with the baſe of the calix, to ſupport the flower in an upright poſition; and by drawing the wire leſs or more out, the flower is preſerved at any diſtance from the ſupport as ſhall ſeem neceſſary, to give it proper room to expand; and if two or three of the like wires are placed alſo in the lower parts of the ſupport-ſticks, placing the ſtem of the flowers alſo in the eye of the wires, all the tyings of baſs, &c. may be cut away.

To have as large flowers as poſſible, curious floriſts clear off all ſide-ſhoots from the flower-ſtem, ſuffering only the main or top buds to remain to flower.

When the flowers begin to open, attendance ſhould be given to aſſiſt the fine varieties, to promote their regular expanſion, particularly the large burſter kinds, they being apt to burſt open on one ſide, and, unleſs aſſiſted by a little art, the petals will break out of compaſs, and the flower become very irregular; therefore attending every day at that period, obſerve, as ſoon as the calix begins to break, to cut it a little open at two other places in the indentings at top, with narrow-pointed ſciſſars, that the openings be at equal diſtances, and hereby the more regular expanſion of the petals will be promoted; obſerving, if one ſide of any flower comes out faſter than another, to turn the pot about, that the other

ſide of the flower be next the ſun, which will alſo greatly aſſiſt the more regular expanſion of the flower.

Likewiſe when intended to blow any particular fine flowers as large and ſpreading as poſſible, floriſts place ſpreading paper collars round the bottom of the flowers, on which to ſpread the petals to their utmoſt expanſion; theſe collars are made of ſtiff white paper, cut circular, about three or four inches over, having a hole in the middle to receive the bottom of the flower, and one ſide cut open to admit it; which is to be placed round the bottom of the petals within ſide of the calix, the leaves of which are made to ſpread flat for its ſupport; and then ſpread or draw out the petals upon the collar, to their full width and extent, the longeſt ones undermoſt, and the next longeſt upon theſe, and ſo of the reſt quite to the middle, obſerving that the collar muſt no where appear wider than the flower; thus a Carnation may be rendered very large and handſome; but we do not recommend the practice as abſolutely neceſſary, only mention it as the practice of thoſe who have much leiſure time, and who take a particular pleaſure in exhibiting very large Carnations; and indeed, a carnation that expands regular in their natural way, whether whole-blower or burſter, although they do not appear ſo large as the collared flowers, yet I ſhould think they muſt appear more natural and beautiful; and even the largeſt burſters may be made to blow very regular with a little attendance, juſt to ſlit the calix, as hath been directed, when they begin to burſt.

But as the whole-blowers always blow regular without any trouble of opening the calix, and although not ſo large as the burſters, yet have great beauty, and are the moſt proper for general culture, for thoſe who have much other buſineſs to mind.

Continue the care of watering the pots, which in dry hot weather will be neceſſary every day, being eſſential to promote the ſize of the flowers, and increaſe the ſtrength of the ſhoots of the plants at bottom, for layers.

And as in June and July the layers will be arrived at proper growth for laying, ſhould alſo be layed to continue your increaſe of the approved varieties, and ſo continue laying the ſhoots of each year's growth at the above ſeaſon, managing them always as before directed.

As to the border Carnations, i. e. ſuch as you intend ſhall flower in borders or beds in the full ground, any of the varieties may be employed, and their propagation both by ſeed and layers is the ſame as already directed; the ſeaſon for tranſplanting them into the places of their final deſtination for flowering, is alſo either in autumn or ſpring, that is, October or beginning of November for the autumn planting, and for that of the ſpring, any time in March, or firſt fortnight in April; removing them with little balls about their roots, planting them about two feet from the edge of the border; and as to culture, it is principally tying up the flower-ſtalks as they advance in ſtature, and to make layers of all the approved ſorts annually, in June or July, for propagation.

*General Obſervations.*

I would juſt hint here, of Carnations in general, whether for pots, or as border-flowers, that their propagation and general culture is always the ſame as already directed, under the two reſpective heads of Propagation by Seed, and by Layers: raiſed and treated according to theſe directions, becomes a good plant the ſame ſeaſon, fit for tranſplanting finally in autumn or ſpring following, either into pots or the open borders, and they will flower in the utmoſt perfection the ſucceeding ſummer.

And that the general ſeaſon for planting out finally all ſorts, ſeedlings and layers from the nurſery-beds, &c. into the places where you deſign they ſhall flower, either in pots or the full ground, is October or beginning of November, or in ſpring any time from the latter end of February to the beginning or middle of April, removing them with ſmall balls about their roots, plant them ſingly, that is, one in a place, and always finiſh with a watering to ſettle the earth cloſe about the roots.

Always in May and June give attendance to tye up the flower-ſtalks to ſupport-ſticks, repeating it occaſionally; for this looks neat to the eye, and promotes the ſize and regularity of the flowers.

Every ſpring it may be proper to ſow ſome ſeed to obtain varieties.

Every ſummer, in June or July, make layers for increaſe of all the approved double ſorts, whether Clove or Carnation, of the Flake, Bizarre, Piquette, or Painted Lady kinds.

Note, they may alſo be propagated by cuttings and pipings, as directed in the Pro-

propagation of Pinks, but theſe are not ſo ſucceſsful in general as layers.

As to the old roots, having a good increaſe of new young plants by layers, you may either eradicate them, or uſe them in different parts of the pleaſure-ground in vacant ſpaces of large borders, &c. for being perennial, they will endure ſeveral years, though the new plants always afford the largeſt and fineſt flowers.

*Saving the Seed.*

All the varieties of Carnations, both ſingle and double flowered plants, produce abundance of ſeed, which ripen freely in Auguſt and September.

But to have the greater chance of obtaining ſeeds for raiſing fine new varieties, you ſhould mark ſome of the fineſt flowers when in bloom, and all thoſe of bad colours, or of other bad properties, ſhould be removed to prevent any admixture of the farina. For the ſame reaſon, it is alſo of importance for the purpoſe of ſeed, to keep the flakes, bizarres, piquettes, &c. as far diſtant as poſſible, whereby each of theſe ſorts may, even from ſeed, be preſerved tolerably permanent, though each in itſelf profuſe in many varieties of its own kind.

It is alſo worth obſerving, that ſeedling plants are generally more prolific in good ſeed, than ſuch as have been long encreaſed from year to year by layers.

The ripening of the ſeeds ſhould be attended in Auguſt and September, to gather the pods in due time, as they ripen in dry weather, which ſpread on paper to dry, then rub them out and put them up in dry papers till ſowing-time in ſpring.

*Second Head of Dianthus.*

DIANTHUS Compriſing thoſe kinds of Dianthus commonly denominated Pinks.

The principal ſpecies of the Pink kind are diſtinguiſhable from the Carnation tribe of the firſt claſs, by the ſhoots and leaves being conſiderably ſhorter, ſmaller, more numerous, and tufted; and the flower-ſtalks ſhorter, the flowers ſmaller, and more crenated.—All of which ſpecies are hardy herbaceous fibrous-rooted plants of the flowery tribe; though there are but two ſpecies eſteemed for general culture, one the Common Pink, a perennial; the other, the Chineſe or Indian Pink, an annual, both of which, admitting of ſeveral eminent varieties of great merit for the ornament of the pleaſure garden.

There are however about four ſpecies, which may be admitted into the flower garden, three perennial and one annual.

Claſs and order the ſame as the Carnation. See the *Firſt Head.*

The firſt three are perennials, viz.

1 DIANTHUS *Deltoidos.*

*The Common Pink.*] Dianthus with numerous ſhort leafy ſhoots crowning the root, in a tufted head cloſe to the ground, cloſely garniſhed with ſmall narrow leaves, and from the ends of the ſhoots many erect flower ſtalks from about ſix to fifteen inches high, terminated by ſolitary flowers, having lanceolate double ſcales to the calix, and crenated petals, and with ſingle and double flowers of different colours, and variegations in the varieties.

This ſpecies and its following varieties are the ſorts of Pinks the moſt commonly known and cultivated, all of which are perennial.

*The moſt material varieties are,*

*Common Red Pink.*—Produces flower-ſtalks eight or ten inches high, and ſmall red flowers.

*Damaſk Pink.*—Produces flower-ſtalks ſix or eight inches high, and reddiſh purple flowers.

*White Pink.*—Producing flower-ſtalks eight or ten inches high, and very white flowers.

*White fringed Pink.*—Produces flower-ſtalks ſix or eight inches high, and pure white flowers, having the edges of the petals conſiderably jagged or fringed.

*Pheaſants-eye Pink.*]—Producing firm flower-ſtalks eight or ten inches high, and large whiteiſh and bluſh-coloured flowers, having a dark purple ſpot or eye in the middle, hence called Pheaſants-eye Pink.

Of this ſort there are many varieties obtained from ſeed, all of them generally retaining the purple eye in the middle, but differing from each other in ſize, doubleneſs, colour, and the ſize and colour of the eye, &c. So that the different intermediate varieties have names according to the fancy of the perſon who firſt raiſed each new variety. And of the different varieties, there are whole blowers and burſters, the latter are generally very large, but the whole-blowing flowers are preferable for the regularity of growth.

*Red Cob Pink.*—Producing flower-ſtalks twelve or fifteen inches high, and large bright red flowers.

Of each of the above varieties of this ſpecies *Dianthus Deltoides*, there are ſingle and double flowers, the ſingles are but little regarded,

garded, as enough of them may be obtained from ſeed, and from which alſo the doubles were firſt obtained; but the doubles being large multipetalous and more beautiful, are the only ſorts worth general culture, and which being once obtained, they may be continued and encreaſed abundantly by layers, ſlips, cuttings, and pipings. See their *Propagation*.

As to the flowering ſeaſon of all the varieties, ſome of the ſmall ſorts, ſuch as the damaſk, and white ſhaggy Pink, often flower in May, or early in June, which are ſucceeded by the others, continuing in ſucceſſion till July, all of which furniſh plenty of ſeed in autumn.

[2]DIANTHUS *Virgineus*.

*Maiden Pink, commonly called Matted Pink.*] Dianthus with numerous low trailing leafy ſhoots, crowning the root in a matted tuft, cloſe to the ground, garniſhed with ſhort, awl-ſhaped deep green graſſy leaves; and many erect flower-ſtalks ſix or eight inches high, terminated each by one red flower having very ſhort calycinal ſcales, and crenated petals.

*Variety.*] With fleſh coloured flowers.

[3]DIANTHUS *Glaucus*.

*Glaucous or Grey-leaſed Mountain Pink.*] Dianthus with many low leafy ſhoots crowning the root in a cluſter cloſe to the ground; very ſhort narrow grey coloured leaves, and many erect branchy flower-ſtalks eight or ten inches high, terminated by large white flowers, having a purple circle in the bottom; and with four lanceolate calycinal ſcales, and crenated petals.

*Variety.*] With double flowers.

## ANNUAL.

[4]DIANTHUS *Chinenſis*.

*Chineſe, or Indian Pink.*] Dianthus with upright firm flower-ſtalks, branching erectly on every ſide, a foot or fifteen inches high, and all the branches terminated by ſolitary flowers; having awl-ſhaped ſpreading calycinal ſcales equalling the tube, and indented petals; and with ſingle and double flowers of different colours, and variegations in the varieties —Flowering from July till November.

*Varieties are.*] With bright red ſingle and double flowers—with purple ſingle and double flowers—white ſingle and double flowers—variegated ſingle and double flowers; of each of which are many intermediate varieties in reſpect to the ſhades, and diſpoſition of the colourings, eſpecially of the variegated kinds, which are in general lively and elegant; the doubles in particular are ſingularly beautiful, being large and very full of petals to the very centre, all of which varieties may be conſidered both as annual and biennial, for they riſing from ſeed in ſpring, flower the ſame year in ſummer, and commonly periſh in winter, eſpecially in moiſt ſoils, but if planted in dry warm ground, ſheltered from ſevere froſt, the roots will continue two years, and flower ſtrongeſt the ſecond ſeaſon of their bloom: they all flower abundantly from July till the beginning of winter, furniſhing plenty of ſeed in autumn, from which the plants are raiſed plentifully in ſpring, either in the full grounds or in hot-beds, to bring them more forward.

All the flowers of the above four ſpecies and their varieties, are in their ſingle ſtate compoſed of five petals, but in their compound or double ſtate, the petals are multiplied, and the firſt and fourth ſpecies are very prolific in double varieties, which are often large and very full of petals, continued in many ſeries to the centre; and both ſingles and doubles ariſe from ſeed, but often ten or twenty or more ſingles to one double.

They flower in June and July, the annual ſort continues till autumn, and all of them produce ſeed in plenty.

*Uſe in Gardens, &c. of all the Sorts.*

All the above four ſpecies of the Pink tribe, and reſpective varieties conſidered, as hardy flowering plants are proper furniture for the compartments of the pleaſure ground; but the firſt ſpecies, *Dianthus Deltoides* and varieties, have ſuperior merit both for the beauty and fragrance of their flowers, and are the ſorts in greateſt eſtimation for general culture, as plants of ornament; and as each plant of any tolerable ſize produces numerous flower-ſtalks, all terminated by flowers, renders them choice furniture for the common flower-borders, or to embelliſh the vacant ſpaces in the fronts of ſmall ſhrubbery clumps. The ſecond and third ſpecies are alſo retained in many gardens, to encreaſe the variety in the collection of flowering perennials. And the fourth ſpecies, *Dianthus Chinenſis*, has great merit, not only for the livelineſs of their beautiful flowers, but alſo for the long continuance of their bloom, which in the ſame plant is often continued in plentiful ſucceſſion three or four months, but have no fragrance.

Obſerve that, as all the perennial Pinks, being both of a tufty and ſpreading growth, and

and produce many flower-ſtalks, they ſhould be diſpoſed ſingly, only one plant in a place; but the annual ſort being different, it is rather proper to diſpoſe them in patches of three or four plants in each.

Any of the ſorts may alſo be cultivated in pots occaſionally, to place in fore-courts, or to adorn any other principal compartment.

Sometimes the Common Pink and varieties are employed to form edgings to beds or borders, but as in one year they are apt to ſpread greatly out of compaſs, and become irregular, they are not well adapted for that uſe.—However, if they are uſed for that purpoſe, the edging ſhould be cut in on each ſide once or twice a year, with garden ſheers.

Great quantities of the Common Pink and varieties are, when in bloom, brought to the London markets for ſale, each with a ſmall ball of earth about their roots, which ſell from one to two or three ſhillings per dozen of plants; but when in pots, double or treble that price; or if they are forced in hot-beds for an early bloom, as mentioned before, they fetch conſiderably more.

About London great quantities of the double varieties of the Common Pink are forced by aid of artificial heat, for an early bloom in February, March, and April, for the ſupply of Covent-Garden market; the pheaſant-eye kinds are moſt commonly uſed, but any of the ſorts will ſucceed: they muſt be potted, and in January, February, or March, placed either in the hot-houſe, or in a forcing-frame, worked either by bark or dung heat. See FORCING FRAME. The plants thus forwarded ſell from about a ſhilling to half a crown per pot, according to the earlineſs of the ſeaſon, and merit of the flowers.

*Propagation, &c. of the Perennial Sorts.*

The firſt, ſecond, and third ſpecies, are propagated by ſeed, layers, ſlips, cuttings, and pipings.

By Seed.—Great numbers of plants may be raiſed with the utmoſt facility by ſeed, in a bed or border of common earth in ſpring, which will all flower the year following, and among which there will probably be many double flowers, and ſome new varieties, particularly of the firſt ſort, Common Pink.—The proper ſeaſon for ſowing is, March and April. Chuſe a bed of rich light earth, dig it neatly, and form the ſurface even, then ſow the ſeed and rake it in; or may practiſe as directed for the Carnations; the plants will appear in a month or five weeks, which, in June or July, when two or three inches high, plant out into nurſery beds till October or ſpring following, and then to be tranſplanted with balls into the places where they are to flower, or they may remain in the beds for flowering, as obſerved of the Carnation ſeedlings. When they ſhew bloom, the ſingles may be drawn out to give room for the double kinds, which you may continue and encreaſe abundantly, by layers, ſlips, cuttings, &c. and all the plants ſo raiſed, produce flowers, having all the properties of thoſe of the mother plant.

By Layers.—The ſame method is to be obſerved for thoſe as for the Carnations, and June, July, and beginning of Auguſt is the time to perform this work, or managing them in every reſpect as the Carnation layers: or if in ſpring, ſome large plants which have ſpread conſiderably, have all their ſhoots covered with earth an inch or two deep, without taking pains to ſlit or tongue them, as in laying Carnations, many of them will emit fibres and be well rooted, and fit to tranſplant in autumn, each a diſtinct plant.

By Slips.—In ſpring, any old plants of the approved varieties may be encreaſed by dividing them into many ſlips, either by ſlipping off the younger ſhoots from the ſides of the main ones, which, though deſtitute of roots, many of them will readily emit fibres and grow; or may divide, or ſlip the plants quite down to the roots, where practicable, ſo as to preſerve as many fibres to each ſlip as poſſible; but ſlips by either method, if done in February, March, or April, will readily ſucceed, and form good plants by the end of ſummer, obſerving, that the ſhort buſhy plants are more eligible for ſlipping, than ſuch that are long and ſtraggling; and ſlips from about three or four, to ſix or eight inches long, will ſucceed. Having therefore ſlipped a proper quantity for planting, let them be planted in a bed or border of good earth, ſix inches aſunder, putting them down almoſt to their tops, give them water directly, and repeat it occaſionally, in dry weather; they readily take root, grow freely, and form good plants by Michaelmas, when, or in ſpring after, they may be tranſplanted with balls, where you deſign them to flower.

By Cuttings.—June and July is the beſt time for this work, when the young ſhoots of the year will be advanced a proper length to form cuttings of two or three inches long,

which planted will readily grow, and form good plants the ſame year.

Obſerve therefore, when the ſhoots of the ſame year's growth are of a proper length, and proportionably firm, not the long ſlender ones, but thoſe of ſomewhat robuſt growth; and of which take off a proper quantity four or five inches long, then trim off all the lower leaves, and cut thoſe at top pretty ſhort, and then at about two or three inches from the top, cut them clean through a joint horizontally, caſting the lower part away, and reſerve the top for planting, which, if two or three inches long, is a proper cutting; being thus prepared, then having ſome rich light earth broken perfectly fine, either in a bed, border, or in large pots, making the ſurface ſmooth, plant the cuttings as follows: take them one by one by their tops, and thruſt the lower end into the earth they will readily make way for themſelves; ſo putting them down full half way, and an inch or two aſunder, and give directly a good watering out of a pot with the roſe on, they ſhould then be covered air-tight with bell or hand glaſſes, which will greatly facilitate their rooting; nor need they be taken off till the cuttings are ſo far rooted as to begin to grow, nor need they be much ſhaded; and the watering, which muſt be often repeated, may be applied around the outſide of the glaſſes, a ſufficiency of which will ſoak to the mold within for the benefit of the cuttings; but for want of glaſſes they may be ſhaded in the heat of the day with mats, and frequently watered.

They will thus be rooted in a month or ſix weeks, aud advance faſt in growth, and ſhould then be fully expoſed; and, when well rooted and advanced conſiderably at top, ſhould be tranſplanted, gently raiſing them out of the earth with their roots as entire as poſſible, and prick them in a bed of good earth five or ſix inches apart, to remain till autumn, or ſpring following; then may be removed to the places allotted for them to flower.

By the above method the London gardeners generally propagate all the choice varieties of double pinks, which is not only the moſt certain and expeditious, but form much better plants than thoſe by ſlips; and to keep up their ſtock, always propagate vaſt quantities every ſummer by this method: an expert hand will plant a thouſand per day, and not one in fifty miſcarry.

By Pipings.—This is nearly the ſame as by Cuttings, only, that inſtead of cutting off at a joint, take the head of the ſhoot in betwixt the finger and thumb, and draw it aſunder at the joint, by which it often comes out of its ſocket as it were, leaving a hollow like a pipe, hence it is called Piping; trim the bottom of each even to the joint, they are then to be planted and managed exactly as directed above for the cuttings.

*Propagation, &c. of the Annual Sort.*

*The Dianthus Chinenſis.*—Being rather of the Annual tribe, or at moſt biennial, is always raiſed from ſeed annually in ſpring, tho' if the plants have a dry warm ſoil in winter, they will abide two years, and produce ſtronger flower-ſtems, more numerous, and larger flowers than the ſame year's ſeedlings.

As the plants however, are eaſily raiſed in great plenty from ſeed, and as they are rather apt to go off in winter, a freſh ſupply ſhould be annually raiſed; the ſeed grows freely in a bed of natural earth, ſown any time in April, or beginning of May, either on the ſurface, and raked in, or firſt rake the ground ſmooth, ſow the ſeed and ſift earth over, to a quarter of an inch deep, or ſow it in drills that depth; but to bring the plants as forward as poſſible, you may ſow the ſeed in a hot-bed, with other annuals of ſimilar quality, ſuch as African marigold, China aſter, &c. See ANNUAL PLANTS.—And in May or June, when the plants of either method of ſowing are a month old, about two or three inches high, prick them out from the ſeed-bed into a bed of good rich earth, in rows ſix inches aſunder, giving water, and occaſional ſhade till rooted; and after having a month's growth here, they will be of a proper ſize for final tranſplantation, taking them up with balls, and planting them into the different compartments of the pleaſure-ground, in patches of three or four plants in each, in which they will appear more conſpicuous in flower than if diſpoſed ſingly.

*Sowing the Seeds of all the Sorts.*

All the ſorts of Pinks of this claſs afford ſeed plentifully in Auguſt and September, which ſhould then be gathered in the pods in dry weather, ſpead to dry and harden on papers, then rubbed out and put up for the ſpring ſervice.

*Third Head of Dianthus.*

DIANTHUS, &c.—Comprehending thoſe ſorts of Dianthus commonly called Sweet-Williams.

This claſs compriſes but one ſpecies, which admits of numerous elegant varieties, all hardy, herbaceous, fibrous-rooted, flowery perennials, diſtinguiſhable from the two former claſſes of *Dianthus*, by having larger ſhoots, much broader leaves, and, by the flowers growing all at top of the ſtalks in aggregate cluſters.

Claſs, order, and characters the ſame as the other ſpecies of *Dianthus*, See the *Firſt Head.*

The ſpecies is,

DIANTHUS *Barbatus.*

*Bearded Dianthus, commonly called Sweet-William.*]—Dianthus with many thick leafy ſhoots crowning the root in a cluſter cloſe to the ground, garniſhed with ſpear-ſhaped evergreen leaves, from half an inch to two inches broad; and upright firm flower-ſtems branching erectly two or three feet high, having all the branches and main ſtem crowned by numerous flowers in aggregate cluſters of different colours, and variegations in the varieties.

The varieties may be divided in two claſſes. Narrow-leaved and broad-leaved kinds, the narrow-leaved ſorts being remarkable for being the moſt productive of variegated flowers, and many doubles.

*Varieties are,*

*Narrow-leaved kind.*]—With narrow leaves and deep red flowers—With pale red flowers—Pale red, and fleſh-coloured flowers—Purpliſh white eyed flowers—Snow-white flowers—White and fleſh-coloured flowers—White and purple flowers—White ſpotted flowers—Red flowers and white borders, called Painted Lady Sweet William; and with many other intermediate ſhades of colours and variegations, and which frequently vary in the flowers of the ſame aggregate; there are alſo ſingle and double flowers of each variety. Among the doubles of this claſs of narrow leaves, is that ſort called the Mule, having a bright red double flower in ſmalliſh aggregates, ſaid to have been accidentally produced from the ſeed of a Carnation, impregnated by the effluvia of a Sweet William, hence is called the Mule.

*Broad-leaved kinds.*]—With broad leaves and tall deep red flowers—Tall fleſh-coloured flowers—Pure white flowers—White dotted flowers—Striped leaves and red flowers—Large double roſe-coloured ſweet-ſcented flowers—Large double deep purpliſh burſter flowers—Double variegated flowers.

All the varieties of both claſſes are hardy herbaceous, evergreen perennials, riſing the firſt year with a large buſhy tuft of leafy ſhoots, continuing green the year round, and the ſecond year ſhoot up flower ſtems, producing flowers in June and July, ſucceeded by abundance of ſeed in autumn.

The corolla, in all theſe varieties of each claſs is, in its ſingle characteriſtic ſtate, compoſed each of five petals, but in the double flowers it is large and multipetalous, and both ſingle and double are obtained from ſeed; though probably ten, twenty, or more ſingles to one double, and the narrow-leaſed kinds are generally the moſt productive of double, which are more commonly variegated than of plain red or white colours.

But both ſingles and doubles are extremely elegant, and in a great degree ornamental garden flowers, which terminating the ſtalks and branches in large cluſters, like umbels, continuing ſix weeks in bloom, but have no fragrance; ſo that their merit conſiſts entirely in their ornamental appearance for the decoration of the borders, and other parts of the pleaſure-ground, in which they are exceedingly conſpicuous and grand; and as they are all ſo hardy as to proſper in any common ſoil of a garden, and may be raiſed abundantly from ſeed in the full ground, a good ſtock of them ſhould always be maintained by an annual ſowing, and the fine doubles by layers, &c. See their *Propagation.*

Some of the large double ſorts may alſo be cultivated in pots, to place occaſionally, to adorn fore-courts, or other principal diſtricts of a garden.

The plants although in general of ſeveral years duration, yet, after the firſt year of flowering, the ſhoots generally become long, ſtraggling, and of unſightly, dwindling growth, ſo that a ſupply ſhould be raiſed every year from ſeed, or layers, for the one year-old plants are always cloſe and buſhy, and flower much ſtronger than thoſe older ſtanding; and the following is their method of propagation:

*Their Propagation.*

They are propagated by ſeed, layers, and ſlips, all of which is eaſily effected in the full ground.

By Seed.—March and April is the ſeaſon for ſowing, and the ſeed is ſold cheap enough at all the nurſeries and ſeed-ſhops: ſow it in a bed or border of light earth broaſt-caſt, and rake it in; in a fortnight after the plants will

come up, which in June or July ſhould be tranſplanted into nurſery-beds of common earth, in rows ſix or eight inches diſtant, to remain until autumn or ſpring following, then taken up with balls about their roots, and planted in the places where they are to flower.

By this method great quantities of the plants are raiſed in gardens about London for ſale, which are generally marketable juſt as they begin to ſhew bloom, and which, of the ſingle kinds, fetch but from ſix-pence to a ſhilling per dozen of plants; but often more than that for one plant of the doubles.

By Layers.—June and July is the proper ſeaſon, and the ſame method is to be obſerved in every reſpect as for the carnations, which ſee, ſo it will be unneceſſary to repeat it here. This is the only method of propagation to continue the fine double-flowered varieties, which being layed, give frequent waterings in dry weather, and they will be well rooted in ſix or ſeven weeks; then ſhould be ſeparated from the old plant, and planted in a bed of light ſoil; and in October ſome of them ſhould be potted, to move to occaſional ſhelter from froſt, for although the doubles are almoſt as hardy as the ſingle kind, yet being more choice it is neceſſary always to have ſome of the fineſt in pots, that they may have protection in ſevere winter weather, obſerving the ſame as for the choice carnations.

By Slips.—February, March, April, and October, is the time for this work, obſerving, if it is to be performed upon the year-old plants, they muſt be ſlipped quite down to the roots, ſo as to have fibres to each ſlip, then may plant them at once where they are to flower; but theſe never make ſo good plants as ſeedlings and as layers, nor do they generally flower ſo ſtrong.

*Saving the Seed.*

The Sweet-williams are remarkably prolific in ſeed, particularly all ſingle varieties, and from which both ſingle and double ſorts are obtained.

If you would cultivate only the fineſt varieties, the flowers which have the moſt beautiful colours, both of the plain and variegated kinds, ſhould, when in full bloom, be marked from which to ſave ſeed: if any ordinary ſorts grow near them, let them be removed to prevent an admixture or emiſſion of the effluvia or male-powder in the flowers of the choſen ſorts, which might occaſion a great variation, for by obſerving this you may continue ſome of the varieties tolerably permanent.

Let the branches of ſeed be gathered in dry weather, and after lying a few days in the ſun to dry and harden, beat it out, and put it up in papers, &c. till ſpring, for ſowing.

DIBBLE *or* DIBBER. A ſimple but uſeful implement of gardening, uſed for planting out all ſorts of young plants, &c.

The beſt ſort of Dibble is that made of the tree of an old ſpade, having the head or top handle entire, and the ſhank twelve or fifteen inches long, made gradually tapering to a point at the lower end, and which to be perfectly complete ſhould be ſhod with a thin ſocket of iron eight or ten inches in length, made alſo tapering to a point at bottom; for an iron-ſhod dibble makes the holes for the reception of plants much eaſier, cleaner, without clogging, and more expeditiouſly than entirely of wood, which is apt to clog with earth, and greatly retard the work of planting.

The above ſort of dibble is proper for planting out almoſt all ſorts of young plants, particularly the fibrous-rooted kinds, and all ſorts of cuttings, &c.

But beſides the above kind of narrow-pointed dibble, for planting out young plants, &c. I ſhould alſo adviſe to have a blunt-pointed one for planting large kinds of ſeeds, and bulbous roots, ſuch as broad beans, potatoes, large kinds of nuts, &c. and the bulbs of crocus, narciſſus, tulips, and other bulbous kinds, that by being rounded at the end, makes a hole to receive the above ſorts of large ſeed and roots plump to the bottom; whereas the narrow-pointed dibble makes the hole deeper than it is capable of admitting them, ſo that there will be a vacancy under the ſeed or root, in which water might ſtand to their prejudice, eſpecially in winter; beſides, when the ſeed or root goes clean to the bottom, it is certainly more effectual to its free growth.

It may indeed be advanced, that the narrow-pointed dibble will anſwer the ſame purpoſe, by ſtriking a little earth into the hole to fill up the narrow part at bottom, previous to planting the ſeed or root, but this in a hurry may often be omitted, and takes up more time: but the blunt-ended dibble makes the hole at once to admit the ſeed or root always plump to the bottom.

But as to planting bulbous roots by dibble, though

though often practiſed, yet if they are to be planted together in beds, I would rather adviſe drilling them in, that is, draw drills three or four inches deep with an hoe, ſo place the roots plump bottom downward in the drills, and earth them over. See the reſpective articles of HYACINTH, NARCISSUS, DRILLS, &c.

DICTAMNUS, White Dittany, or *Fraxinella.*

It conſiſts of one hardy, herbaceous, flowery perennial, riſing two or three feet high, crowned by ſpikes of pentapetalous flowers.

Claſs and order, *Decandria Monogynia.*

*Characters.*] CALIX, five ſmall, oblong, pointed leaves. COROLLA, five irregular petals. STAMINA, ten riſing filaments, and four-cornered antheræ. PISTILLUM, a pentagonous germen, ſhort incurved ſtyle, and acute ſtigma. PERICARPIUM, a quinquelocular bivalvular capſule, and roundiſh hard ſeeds.

The ſpecies is,

DICTAMNUS *Albus.*

*White Dittany, commonly called Fraxinella.*] Dictamnus, with thick, penetrating, perennial roots, collected into a head at top, ſending up erect ſtalks annually two or three feet high, garniſhed with pinnated alternate leaves, of three or four pair of oblong ſtiff lobes, terminated by an odd one, and the ſtalks crowned by long, pyramidal, looſe ſpikes of flowers.

*Varieties of this are*] With white flowers—with red flowers, ſtriped with purple—with ſhort ſpikes of flowers.

The flowers of all the varieties have five unequal petals, i. e. two of them turning upward, two oblique on the ſides, and one turning downward, appearing in the latter end of May and in June, ſucceeded by ripe ſeeds in September.

They are very ornamental garden flowers, ſo merit a place in every collection of flowery perennials, and they ſucceed in any of the common borders.

The whole plant imparts a balſamic odour, when bruiſed, and the roots are uſed in medicine.

All the varieties are propagated by ſeeds, in a bed or border of common earth, ſowed in autumn or ſpring; but the autumn ſowing, i. e. in September or October, generally riſe ſtrong the ſpring following, which in autumn after, when the leaves decay, ſhould be planted in a bed or border ſix inches apart, to remain a year or two, then tranſplanted into the flower-borders, where they will flower the ſucceeding ſummer, and will endure many years, increaſe exceedingly in magnitude, and flower every year ſtronger.

All the neceſſary culture is, to cut down the decayed ſtalks every autumn, dig the ground in winter or ſpring, and keep them clean from weeds in ſummer.

DIGGING.—Digging ground may be conſidered as a ſort of garden-tillage, or neceſſary preparation of the ſoil for the reception of all ſorts of ſeeds and plants, and which ſhould be duly performed annually, either in autumn, winter, or ſpring, particularly for every new crop, and is alſo beneficial to crops of perennial ſtanding, whether eſculent flowers or ſhrubs, &c.

This operation is performed two different ways.—Plain digging,—and digging by trenches, commonly called trenching.

Plain Digging.—This is beginning at one end of any piece of ground, bed, or border, and dig it one ſpade deep, right back ſpit and ſpit regularly to the place where you finiſh; the method is this, begin as aforeſaid at one end of the piece of ground you intend to dig, and with your ſpade open a trench quite a-croſs, one good ſpade wide, and one deep, carrying the earth to the end or place where you finiſh; then keeping your face to the opening, proceed to digging one ſpade deep regularly from one ſide of the piece to the other, turning the ſpits neatly into the trench, and the next courſe againſt theſe, and ſo keep digging ſtraight back, ſpit and ſpit, ſtill preſerving an open trench, a good ſpade width and depth, between the dug and undug ground, that you may have full room to give every ſpit a clean turn, taking all the ſpits perpendicularly, and not take too much before the ſpade, eſpecially in ſtiff land, or where the ſurface is full of weeds, or is much dunged; ſo giving every ſpit a clean turn, the top plump to the bottom, and the bottom to the top, that the weeds or dung on the ſurface may be buried a due depth, and that the clean freſh earth may be turned up.

As you proceed break all large clods, and preſerve an even ſurface, carrying both ſides and middle on equally, unleſs one ſide ſhall be hollow; then carry on the hollow ſide firſt, in a kind of gradual ſweep, inclining the ſpits of earth rather that way, which will gradually raiſe that ſide, and reduce the high one, obſerving the ſame if both ſides are high and the middle hollow, or both ſides hollow and

the middle high, always keeping the lower ground advancing gradually before the higher, by which you will always maintain a uniform level, whether horizontal or declining.

The ſame ſhould alſo be obſerved in beginning to dig any piece of ground, that if one corner is much lower than the other, carry on the lower part ſomewhat firſt, in a kind of eaſy ſweep or ſlanting direction, as far as neceſſary; likewiſe in finiſhing any piece of digging, that if one corner ſhall be low and the other high, carry the digging gradually round upon the lower ſide, ſo as to finiſh at the higheſt corner; and having digged to the end, or that part of any piece of ground where you intend to finiſh, then uſe the earth digged out of the firſt trench to make good the laſt opening equal with the other ground.

In plain digging dunged ground, if the dung is quite rotten, you may either dig clean through, giving each ſpit a clean turn, to bury the dung plump in the bottom of the trench; but if you cannot readily do this, trim the dung a ſpade's width at a time into the furrow or open trench, and ſo dig the ground upon it, which is rather the moſt effectual method, whether rotten or long freſh dung.

In the courſe of digging, all root-weeds that are perennial ſhould be carefully picked out, particularly couch-graſs and bear-bind, the *Convolvulus Sepius*, for the leaſt bit of either will grow, encreaſe greatly in ſummer, and prove moſt troubleſome weeds.

But ſlight rooting weeds on the ſurface being turned clean to the bottom, will rot, and never trouble you again.

Digging by trenches, or trenching.—This is called trenching, becauſe the ground is digged in regular trenches, trench and trench, of two or three ſpades width, and one, two or more deep in the following manner:

Begin at one end of the piece of ground, and open a trench by line and ſpade two full ſpades width at leaſt, and one or two deep, and wheel the earth to the place where you ſhall finiſh, then mark out a ſecond trench of the ſame width, pare all weeds on the ſurface into the bottom of the firſt, and then beginning at one end of the ſecond, and ſtanding ſide-ways to the other, dig it the full width and depth as above, turning the earth into the firſt trench, obſerving, that if you go two ſpades deep, dig the top ſpit along firſt, then beginning again at the end, dig the ſecond courſe; then mark out a third trench, dig it into the ſecond, and ſo proceed trench and trench to the end of the ground, remarking, that if you would have each courſe of ſpits in the ſeveral trenches their full depth, it is proper to ſhovel up the crumbs or looſe earth at bottom of each courſe; ſo may dig either one ſpade deep and the crumbs, or two and crumbs as ſhall ſeem neceſſary, but by no means go below the good ſoil; and one good full ſpade deep, with a good paring at top, is, for common trenching ſufficient for general crops of moſt ſorts of plants, and more than that is only neceſſary on particular occaſions, and for particular plants, which will always be hinted in the reſpective articles.

I would however obſerve, that by trenching occaſionally two ſpades deep where the ſoil admits, by turning the bottom ſpit to the top, renews the ſoil; and by turning the exhauſted or worn-out earth to the bottom that depth for two or three years, gives it a ſort of reſpite to recruit new vigour in its vegetative quality, that being again trenched up to the top will produce crops the more abundantly, and in greater perfection.

It is indeed good culture when practicable, to trench two moderate ſpades deep, with or without the crumbs, for carrots and parſnips and ſuch like roots which ſtrike deep into the ground, and for liquorice three full ſpades deep is neceſſary, for the roots, the uſeful part, often ſtrike down four feet deep.

The merit of trenching in general, is ſuperior to plain digging for principal crops, or any plantations, in that the top ſoil, all weeds and dung are more effectually buried in the bottom, and the freſh ſoil at bottom more readily turned to the top, which is of conſiderable importance in the growth of all ſeeds and plants; therefore in digging ground for any general crops or plantations of young trees, &c. I ſhould adviſe to dig it principally by trenches one good ſpade deep at leaſt, or two occaſionally, eſpecially when neceſſary to renew the ſoil, or as you ſhall judge proper for long-rooted eſculents, as carrots, &c. or plantations of choice fruit trees.

In all trenching, whether one, two, or more ſpades deep, always, previous to digging, pare the top of each trench two or three inches deep or more, with all weeds and other litter into the bottom of the open one, which not only makes clean digging, and encreaſes the depth of looſe ſoil, but all weeds, as alſo the ſeeds of them that may have ſcattered on the ſurface are regularly buried at ſuch a depth,

depth, that the weeds themſelves will rot, and their ſeeds cannot vegetate.

In trenching dunged ground, if you trench but one ſpade deep bury the dung of each trench regularly in the bottom; but if two ſpades deep, it will be eligible to bury the dung between the two ſpits, that is, triming back the dung, dig the firſt courſe, turning it into the bottom of the open trench, then trim in the dung upon that, and dig the ſecond courſe and turn it in upon the dung, and ſo proceed trench by trench.

When intending to trench for ſpring crops, or even for any autumn or winter plantation, it is good culture to perform it ſome conſiderable time before, to lie fallow till the time for ſowing or planting, to meliorate by the weather; but more particularly for ſpring crops, ſo that if it is trenched up in rough ridges in winter, to lie till ſpring, and then levelled down, proves very beneficial to plants of all ſorts.

I would alſo adviſe, that all trenching in winter, intended for ſpring crops, be trenched up in rough ridges, that is, inſtead of forming a level ſurface, lay the earth of each trench in a ſharp ridge, as you advance with the work, laying the ſpits of earth rough, that the ſoil may lie hollow to receive the greater benefit from the ſun, air, and froſt, to meliorate and enrich its quality.

The above method of ridging the trenches, is univerſally practiſed by the London kitchen-gardeners, even if the trenching is done in ſpring, and is to lie but a week, or two or three days, for it is ſoon levelled down when to be ſown or planted, and it greatly improves the ground.

The ridges are ſoon levelled down in ſpring, or when the ground is wanted for ſowing or planting, obſerving to chuſe dry weather for this work, levelling them regularly ridge and ridge lengthways, ſtirring all the ground, and preſerve an even ſurface; and if the ground is for ſowing with ſmall ſeeds, do not level down much more than you can ſow the ſame day, for fear of rain coming to render the ſurface cloggy, or the ſun and winds dry it too much, as moſt land is always in beſt order for ſowing while it is freſh ſtirred, for it not only falls to pieces more readily in raking, to cover the ſeed more effectually, but freſh ſtirred land promotes a quick and free germination in the ſeed.

Gardeners that have large grounds often hire the digging by the rod, the prices generally according to the nature of the ground, whether light, looſe, clean, and eaſy to be digged, or of a ſtiff nature, and whether it is clean or foul with weeds, or not dunged, or dunged, and whether by plain digging, or digging by trenches.

The prices by plain digging, that for light clean free-working ground, is, about London, commonly two-pence, or two-pence halfpenny per rod; and if dunged, three pence. But ſtiff ſtubborn-working land is often three-pence or four pence without dung; and where ground is very full of perennial weeds, ſuch as couch graſs, bear-bind, and the like, which ſhould all be picked out by hand, an extra allowance is generally given per rod, a half-penny or penny, according as the ground is leſs or more foul.

The prices by trenching is, that for one ſpade deep, and a top paring, commonly from two pence halfpenny to four pence, according to the nature of the ground, and whether dunged, or clean, or foul with weeds, though clean free-working ground is generally digged with dung one ſpade deep for three pence, and if two ſpades deep, from four pence to ſix pence, or eight pence.

A man will dig by plain digging, of light, free-working clean ground, eight, ten, or twelve rod a day, from ſix to ſix, though in ſome of the light clean ground about London, I have known a man turn up fifteen or twenty rod a day, from five to ſeven; on the other hand, in ſtiff ſtubborn ſoils a man may work hard for ſix or eight rod in a day of twelve hours. And that digging by trenches, or trenching, if only one ſpade deep, without the crumbs, or ſhovelling at bottom, a man will dig almoſt as much as by plain digging; and by double digging, or two ſpades depth, from four to ſix rod a day may be good work, though in harſh-working ground, a man may labour hard to get up three or four rod a day.

DIGITALIS, Fox Glove.

This genus furniſhes hardy, herbaceous, tall, flowery, biennials and perennials for the pleaſure-ground, and a tender ſhrubby exotic for the green-houſe, all of them adorned with long, ſpear-ſhaped, ſimple leaves, and long ſpikes of large bell-ſhaped flowers.

Claſs and order, *Didynamia Angioſpermia.*

*Characters.*] CALIX is five-parted and perſiſtent. COROLLA is monopetalous, bell-ſhaped, tubular, and with the limb ſlightly four-parted, having the upper lip ſpreading and emarginated, and the under one largeſt. STAMINA, two long and two ſhort filaments inſerted

inſerted into the baſe of the Corolla, and bipartite antheræ. PISTILLUM, an acuminated germen, ſimple ſtyle, and acute ſtigma. PERICARPIUM, an oval, bivalvular, bilocular capſule, and angular ſeeds.

There are about four herbaceous and one ſhrubby ſpecies, retained in our gardens as plants of ornament.

The firſt four are herbaceous and hardy.

[1]DIGITALIS *Purpurea.*

*Purple Common Fox Glove.*] Digitalis, with an upright ſtrong ſtalk three or four feet high, garniſhed with long, rough, hairy leaves, and terminated by a long looſe ſpike of large purple flowers ranged along one ſide, having oval leaves to the calix, and obtuſe corolla, with an entire upper lip.

*Variety*] With white flowers.

[2]DIGITALIS *Lutea.*

*Yellow Fox Glove.*] Digitalis, with an upright ſtrong ſtalk two or three feet high, garniſhed with long, ſpear-ſhaped, ſmooth leaves, and the upper part with a long ſpike of yellow flowers ranged along one ſide, having the leaves of the calix ſpear-ſhaped, an acute corolla, and bifid upper lip.

*Varieties are*] With ſmall yellow flowers—with large yellow flowers——with narrow leaves and ſmall yellow flowers.

[3]DIGITALIS *Ferruginea.*

*Ferruginous, or Iron-coloured Fox Glove.*] Digitalis, with an upright ſtalk five or ſix feet high, adorned with narrow leaves three inches long, and terminated by a very long erect ſpike of iron-coloured flowers, having oval leaves to the calix, and the lower lip of the corolla very long.

[4]DIGITALIS *Thapſi.*

*Thapſi, or Purple Spaniſh Fox Glove.*] Digitalis, with an upright ſtalk a foot and a half high, garniſhed with very long, woolly, rough, veined, decurrent leaves, and terminated by a ſhort ſpike of purple flowers.

Shrubby and tender.

[5]DIGITALIS *Canarienſis.*

*Canary Shrubby Fox Glove.*] Digitalis, with a ſhrubby, upright, branchy ſtalk riſing five or ſix feet high, ſpear-ſhaped, rough leaves four or five inches long, and half as broad, and with all the branches terminated by looſe ſpikes of flowers, having the calycinal leaves ſpear-ſhaped, and an acute two-lipped corolla.

The flowers of all theſe ſpecies of Digitalis are of one bell-ſhaped petal, moderately large, and moſtly ranged along one ſide of the ſtalk. See the *Characters.*

Of theſe ſpecies the firſt ſort grows wild in moſt parts of Britain, but all the others are of foreign growth. All the herbaceous kinds are hardy, and proſper any where, but the ſhrubby ſort requires ſhelter of a green houſe in winter.

The four herbaceous ſpecies are biennial and perennial, all of them riſe firſt with a large tuft of leaves, crowning the root, and amidſt them riſe the ſtalks in ſpring, flower in June, ripen ſeeds in autumn, and the ſtalks and leaves ſoon after decay, and ſometimes alſo the root, eſpecially of the firſt ſort, which is ſeldom more than biennial.

All the herbaceous ſpecies may be employed as plants of ornament in the embelliſhing the different compartments of the pleaſure-ground, and will proſper in any common ſoil and expoſure.

The ſhrubby ſort claims a place among the green-houſe exotics, is a very pretty flowering plant, often continuing its bloom from May till October.

*Propagation, &c.*

The herbaceous ſorts are raiſed from ſeed in the common ground, ſown in autumn or ſpring, but which if ſown in autumn are commonly more ſucceſsful; when the plants are come up three inches high, prick them out at ſix inches diſtance, to remain till autumn, then tranſplant them where they are to flower.

The ſhrubby ſort is alſo raiſed from ſeed, ſowed in pots of rich earth in autumn, &c. and placed in a garden-frame to have occaſional protection from froſt, exceſſive rains, and cold; and when the plants are two or three inches high, plant them ſeparate in ſmall pots, and afford them ſhelter during cold weather, and place them in the green-houſe in winter.

DIOSMA, African Spiræa.

This genera compriſes ſeveral low ſhrubby exotics for the green-houſe, garniſhed with ſmall entire leaves, and numerous, ſmall, quinquepetalous flowers.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX is five-parted, plane at the baſe, and perſiſtent. COROLLA, five oval, obtuſe, erect petals, and a coronated quinquefid nectarium. STAMINA, five filaments, and oval, erect antheræ. PISTILLUM, a germen crowned by the nectarium, ſimple

ſimple ſtyle, and obſolete ſtigma. PERICARPIUM, five united capſules, each having one oblong, depreſſed, ſmooth ſeed.

The ſpecies are,

[1]DIOSMA *Oppoſitifolia.*

*Oppoſite-leafed Dioſma* ] Dioſma, with a ſhrubby ſtem, branching irregularly three or four feet high, garniſhed with awl-ſhaped, acute leaves, placed oppoſite, and numerous, ſmall, white flowers all along the ſides of the branches.

[2]DIOSMA *Hirſuta.*

*Hairy Sweet-ſcented Dioſma.*] Dioſma, with a ſhrubby ſtem, branching regularly five or ſix feet high, narrow hairy leaves, placed alternate, and cluſters of white flowers at the ends of the branches.

[3]DIOSMA *Rubra.*

*Red Flowering Dioſma* ] Dioſma, with a ſhrubby ſtem branching three feet high, narrow, acute, ſmooth leaves, keel-ſhaped underneath, and ſpotted on both ſides, and red flowers.

[4]DIOSMA *Ericoides.*

*Heath-leafed Dioſma.*] Dioſma, with a ſhrubby ſtem branching three or four feet high, narrow ſpear-ſhaped leaves, convex underneath, and imbricated two ways.

All theſe plants are natives of Africa, and require the ſhelter of a green-houſe here in winter. They are all very ornamental during their bloom, and moſt of them impart a fragrant odour, ſo are worthy of a place in every curious green-houſe collection.

*Propagation, &c.*

All the ſorts are propagated plentifully by cuttings in ſpring or ſummer, planting them in pots, ſeveral in each, and plunge them in a hot-bed, they will be well rooted in two months, and may then be potted ſeparately, and managed afterwards as other green-houſe ſhrubs. See GREEN-HOUSE PLANTS.

DODECATHEON, American Bear's-ear, formerly *Meadia.*

It furniſhes one low, flowery perennial for the pleaſure ground, adorned with umbellate cluſters of monopetalous flowers.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX, a many-leafed involucrum, and each floret having a monophyllous, five-parted, permanent cup. COROLLA, many florets, forming a ſort of umbel, each floret monopetalous, cut into five retroflexed ſegments. STAMINA, five ſhort filaments, and arrow-pointed antheræ, connected into a beak. PISTILLUM, a conical germen, ſlender ſtyle, and obtuſe ſtigma. PERICARPIUM, an oblong, oval, unilocular capſule, containing many ſmall ſeeds.

The ſpecies is,

DODECATHEON *Meadia.*

*Virginian Dodecatheon, formerly called Meadia.*] Dodecatheon, with a yellow perennial root, crowned by ſeveral long ſmooth leaves, ſix inches long and two or three broad, and between them erect flower-ſtalks eight or ten inches high, each terminated by an umbellate cluſter of quinquefid, retroflexed, purple flowers. See the *Characters.*

This is a hardy perennial, flowers very ornamentally in May, ripens ſeeds in July, and the ſtalks and leaves decay in autumn, ſo are renewed from the root annually in ſpring.

It will ſucceed in any of the common borders, but is the moſt proſperous in a ſomewhat ſhady ſituation.

*Propagation.*

Its propagation is by ſeed, and by off-ſets of the roots.

By Seed.—Sow the ſeed in autumn, ſoon after they are ripe, in a ſhady border, or in pots, moving them to occaſional ſhade in hot weather, the plants will come up in the ſpring, and when their leaves decay, plant them on a ſhady border, ſix or eight inches apart, to ſtand a year; then tranſplant them into ſhady flower-borders.

By Off-ſetts.—In Auguſt or September, when the leaves decay, is the propereſt time to remove the roots, and take off the ſlips for encreaſe, planting them again directly, and each off-ſet will flower the following ſummer.

DORONICUM, Leopard's-Bane.

The plants are hardy, herbaceous perennials, for the large departments of the pleaſure-ground, they obtaining from eighteen inches to three feet ſtature, terminated by large compound flowers.

Claſs and order, *Syngeneſia Polygamia Superflua.*

*Characters.*] CALIX compound radiated flower, having the general cup formed of a double ſeries of long narrow leaves. COROLLA, many tubular hermaphrodite florets form the diſc, and ligulated females the radius. STAMINA, five filaments and cylindric antheræ. PISTILLUM, a germen, ſmall ſtyle, and in the hermaphrodites an indented ſtigma, in the females two, which are reflexed. PERICARPIUM, none. SEMEN, a ſingle furrowed downy ſeed under each floret.

The material ſpecies are,

[1]DORONICUM *Pardalianches.*

*Greateſt Leopard's-Bane.*] Doronicum, with thick, fleſhy, knotty, penetrating roots, crowned by a cluſter of heart-ſhaped hairy leaves on long foot-ſtalks, and amidſt them upright channelled ſtalks, three feet high, garniſhed with a few amplexicaule leaves, and each terminated by one large compound radiated yellow flower.

[3]DORONICUM *Plantagineum.*

*Plantain-leafed Leopard's-bane.*] Doronicum with thick fleſhy roots crowned by oval acute-pointed leaves; and between them upright ſtalks two feet high, and alternate branches, ſurmounted by large compound yellow flowers.

[2]DORONICUM *Bellidiaſtrum.*

*Bellidiaſtrum, or Wild Daiſy leaved Leopard's Bane.*] Doronicum with ſhort hairy leaves, and upright ſimple naked ſtalks a foot high, terminated by one white and yellow flower.

*Variety.*—With broad leaves, taller ſtalks, and red and white flowers.

All theſe plants are hardy and perennial in root, but annual in ſtalk, which riſe in ſpring, flower in May, ripen ſeeds in July, and decay to the root in autumn.

The flowers are univerſally compound and radiated. See the *Characters.*

Theſe plants may be employed in the large departments of the pleaſure ground, where many plants of eaſy culture are required to encreaſe the variety; for they will grow any where, and where the ſeeds ſcatter many young plants will riſe naturally.

*Propagation.*

They are eaſily propagated by ſeed, and by their ſpreading roots; either of which may be performed in autumn or ſpring.

Sow the ſeed on the ſurface, and rake it in, and when the plants are two or three inches high prick them in beds nine inches diſtance, which tranſplant in autumn where they are to remain.

Off-ſets of the roots taken off in autumn, or early in ſpring, will flower in May following.

## DRACOCEPHALUM, Dragon's-head.

It conſiſts of herbaceous perennials and annuals for the pleaſure-ground and greenhouſe, riſing with upright ſtalks, from about eighteen inches to three feet high, garniſhed moſtly with entire leaves, and whorled ſpikes of ſmall monopetalous ringent flowers.

Claſs and order, *Didynamia Gymnoſpermia.*

*Characters.*] CALIX is monophyllous, tubular, and permanent. COROLLA is monopetalous and ringent, with large inflated chaps, having an obtuſe arched upper lip, and the lower one trifid. STAMINA, two long and two ſhort filaments, and heart-ſhaped antheræ. PISTILLUM, a four parted germen, ſlender ſtyle, and bifid reflexed ſtigma. PERICARPIUM, none. SEMEN, four naked ſeeds lodged in the Calix.

The principal ſpecies are,

[1]DRACOCEPHALUM *Virginianum.*

*Virginian Perennial Dracocephalum.*] Dracocephalum with upright, four-cornered ſtalks a yard high, adorned with ſpear-ſhaped ſawed leaves, oppoſite at each joint; and terminated by erect ſpikes of purple flowers in July and Auguſt.

[2]DRACOCEPHALUM, *Ruyſchiana.*

*Ruyſchiana, or blue-ſpiked perennial Dragon's-head.*] Dracocephalum with an upright ſquare ſtalk two feet high, garniſhed with very narrow ſmooth entire leaves; and terminated by whorled ſpikes of large blue flowers, having ſmall bractæ under each whorl; it flowers in June, and the ſeeds ripen in autumn.

[3]DRACOCEPHALUM, *Moldavica.*

*Moldavian annual Dracocephalum*, or *Moldavian Balm.*] Dracocephalum with upright branchy ſtalks a foot and half high, garniſhed with oblong deeply-ſawed leaves, and terminated by whorled ſpikes of blue flowers; and the whole plant emits a very balſamic fragrance:

*Variety.*—With white flowers.

Both the varieties flower in July, and the ſeed ripens in September.

DRACOCEPHALUM, *Canarienſe.*

*Canary ſweet-ſcented perennial Dracocephalum, commonly called Balm of Gilead.*] Dracocephalum with upright ſquare perennial ſtalks three or four feet high, garniſhed with compound leaves of three or five ſawed lobes, and ſhort ſpikes of pale blue flowers, appearing moſt part of ſummer, and the whole plant emits a ſtrong balſamic odour.

The firſt three ſpecies are hardy, the firſt two of which are perennial, but the third is annual, all of them may be employed as plants of ornament, of which the firſt and ſecond have the moſt merit as flowering plants, though they may be all employed to good advantage in forming variety in extenſive grounds, and will proſper in any common ſoil.

The

The fifth ſort, *Balm of Gilead* is ſomewhat tender, requiring ſhelter of a green-houſe or garden-frame in winter, by which care it will retains its ſtalk and leaves the year round, ſo may be conſidered as an herbaceous-ſhrubby evergreen; it will however ſometimes live in the full ground in a warm dry border, in mild winters, but this is not always to be depended on, therefore ſhould keep them principally in pots, to move to occaſional ſhelter in winter, but they only want protection from froſt; great quantities of this plant are cultivated by the ſetting gardeners about London for the markets, where they are ready ſale, at ſix pence or nine pence per pot.

*Propagation.*

The firſt ſort may be raiſed from ſeed, and by parting the roots, but it propagates plentifully by the latter method, which may be performed in autumn, or early in ſpring.

The ſecond ſort is raiſed plentifully from ſeed ſown in a bed of light earth in April, and when the plants are two or three inches high, prick them out at ſix inches diſtance, giving occaſional water, and ſhade from the ſun till rooted, ſo to remain here till October; then tranſplant them with balls into the borders, and other compartments of the pleaſure-ground, obſerving, that it is proper to raiſe ſome freſh plants every two years, to ſucceed the old ones.

The third ſort and variety, being annual, are raiſed every year from ſeed, ſown in ſpring in ſmall patches in different parts of the borders where the plants are to remain to flower. See HARDY ANNUALS.

The fourth ſort is propagated eaſily by ſeed and by cuttings.

By Seed.—It may be ſowed in autumn or ſpring, the autumn ſowing will ſometimes riſe the ſame ſeaſon, or if not, they will ariſe early in ſpring, and be forwarder than the ſpring ſowings; they ſhould be ſown in pots of light rich earth a quarter of an inch deep, and ſheltered in a frame, or glaſs caſe, occaſionally in cold weather; and when the plants are two inches high, tranſplant them into ſeparate ſmall pots

By Cuttings.—Cuttings of the ſtalks and branches about five or ſix inches long, planted any time in ſummer, either in a ſhady border, or plant ſeveral in large pots, moving them to occaſional ſhade, and give waterings in dry weather, they will readily take root, and towards autumn may be planted in ſeparate pots.

DRILL-SOWING, &c. In gardening, drills are ſtraight narrow openings, formed in the earth with a hoe, from half an inch to five or ſix deep, for the reception of the ſeeds and roots of certain plants, which ſucceed beſt by that mode of culture.

Many ſorts of eſculents ſucceed by this method, as for example, all ſorts of peas, and kidney-beans ſhould always be cultivated in drills, for as the ſeed being rather large, by forming drills an inch or two deep for their reception, they are more conveniently ſowed, and covered regularly at a proper depth with earth; and that the drills being in ſtraight ranges two or three feet aſunder, the plants conſequently riſe in rows that diſtance, whereby there is due room between the rows, to hoe the ground, to deſtroy weeds, and to looſen the ſoil, and draw it up occaſionally on each ſide of the plants to ſtrengthen them, and forward their growth; likewiſe when their produce is ready, their ſtanding diſtant in drills allows room to go in between, to gather the crops without damaging the plants: broad-beans are alſo ſometimes drilled in, though they are more commonly planted with a dibble; however, in drills two or three inches deep they may be planted to great exactneſs, and covered all an equal depth, allowing the drills three feet diſtance at leaſt: aſparagus plants are alſo planted more commodiouſly in drills ſix inches deep, than by any other method. Parſley, coriander, chervil, and all ſmall ſallad-herbs, ſuch as creſſes, muſtard, &c. ſhould alſo be ſown principally in drills half an inch deep, as in which, the herbs are more eaſily cleaned, and more readily gathered for uſe. Spinach is alſo ſometimes ſowed in ſhallow drills, but more eſpecially when cultivated between rows of other plants, as that of broad-beans, early cabbages, &c. it however ſhould be ſowed thin, otherwiſe the plants will draw each other weak; but I would rather adviſe the main crops of this plant to be ſowed principally broad-caſt over the ſurface of the ground, and raked in, and the plants hoed out to four or five inches diſtance. Beet having large ſeed, may be ſown in inch-deep drills, in order, that they may be more effectually buried an equal depth. See the reſpective articles.

Many ſorts of the larger ſeeds, nuts, &c. of trees, ſhrubs, and herbaceous plants, may alſo be ſowed in drills an inch or two deep, in proportion to their ſeveral ſizes.

Bulbous, and tuberous flower-roots are al-

ſo planted with great facility and exactneſs in drills of due width and depth; but theſe kind of roots are moſt commonly planted with a dibble; I ſhould however, rather recommend the drilling, eſpecially for ſuch that are to be cultivated in continued rows, or in beds, proportioning the width and depth of the drill to the ſize of the reſpective roots; as for example, if for crocus, ſnow-drop, winter-aconite, anemone, ranunculus and the like, two or three inches wide and deep is ſufficient; but for the larger kind, ſuch as hyacinths, narciſſus, tulips, lilies, &c. from three or four, to five or ſix inches depth is neceſſary, and from ſix to twelve inches between the rows; placing the roots bottom downward plump in the bottom of the drills at the ſame diſtance, and draw the earth evenly over them; but for more particulars, ſee the reſpective articles.

With reſpect to the method of drawing or forming drills, this ſhould generally be performed by hoe and line; that is, ſet a line as tight as poſſible, then with a common hoe held corner-ways, with the edge cloſe to the line, draw the drill along accordingly, from half an inch to five or ſix deep, as the different ſorts of ſeeds and roots ſhall require, as exhibited in the reſpective articles.

Though drills for ſome particular ſmall ſeeds, may be drawn with the hoe flat-ways, i. e. the edge downward, ſo as to make a broad flat-bottomed drill, half an inch, or an inch deep; which, for inſtance, may be more particularly neceſſary for the different ſorts of ſmall-ſallad herbs, ſpinach, &c. when intended to raiſe them in drills, and for many kinds of flower ſeeds ſown for tranſplantation.

But for ſeeds of tender plants, which may require the aid of hot-beds, and if neceſſary to ſow them in drills, as a hoe cannot be introduced, the ends of the two firſt fingers, or that of a ſhort flat ſtick, an inch or two broad, will form a proper drill.

As ſoon as the ſeeds or roots of any ſort are ſowed or planted in drills, draw the earth over them evenly, either with a hoe or rake, or with the hand for the very ſmall or more delicate ſorts; though for the large kinds, ſuch as peas, kidney beans, broad-beans, &c. may turn the earth in upon them expeditiouſly with the feet alternately, being careful to cover all an equal depth, and trim the top of each drill clear from ſtones and clods, ſo as to leave a ſmooth ſurface.

DUNGS. In gardening there are two admirable properties in Dungs, viz.

The one is to repair the decays of worn-out or exhauſted ſoils, and to meliorate and fatten the earth and render it fertile: the other is to produce a certain degree of heat when formed into hot-beds; which, in ſome meaſure ſupplies the office performed by the heat of the ſummer's ſun, by producing crops of choice plants, fruits, and flowers in winter, or early in ſpring, that could not be obtained in the natural ground before ſummer; the former of which properties, (as manure) is effected both by new and old or rotten Dungs; and that of various ſorts, but the latter property (for hot beds) is only to be found in one particular ſort, i. e. horſe-dung, including the wet litter and Dung together, as it comes from the ſtables, and while it is newly made, before it rots and loſes its heat.

Dungs for Manure.—Various ſorts are recommended and uſed, according to the qualities of the ſoil they are deſigned to reſtore, meliorate, and enrich.

As for example; ſome lands are very moiſt, heavy, ſtubborn, and cold; to improve which, ſome Dungs are of a hot light quality, as that of horſes, ſheep, and pigeons, &c. tho' for gardens, horſe or ſtable Dung, tolerably rotted, either alone, or mixed with light materials, is the beſt of all to uſe in any conſiderable quantity for ſuch land: on the other hand, ſome ground is light, dry, and hot, and requires moiſt, fat, and cooling Dungs, as that of oxen, cows, hogs, &c. to render the ſoil fatter, and more compact to retain its virtue. However, a mixture of all theſe, i. e. horſe, and neat or cow Dung, &c. tolerably rotted, will ſuit almoſt every ſort of ſoil, or either of them alone, eſpecially if thoroughly rotten, will prove beneficial to moſt kinds of garden land.

Horſe-dung, however, is certainly the beſt improvement for cold land that can be procured, and may be uſed ſucceſsfully both new and rotten; not however uſed new or ſtrawey for carrots, parſnips, or other eſculent roots of ſimilar growth, but for any other above-ground crops; new horſe-dung juſt as it comes from the ſtable, may be uſed to much advantage in cold moiſt land, which in ſuch ſoils frequently ſucceeds better than that which is quite rotten, as that of old hot-beds, or of the like nature.

We may alſo conſider horſe-dung the moſt uſeful of any for gardens, and is the moſt common Dung uſed as manure in many places, eſpecially after having rotted in dunghills, or having

having been previouſly uſed for hot-beds in winter and ſpring, for early and tender crops; which crops being all gone by autumn, or winter following, when the Dung of the hot-bed will have become rotten and buttery, and is then carried off as manure, into the different departments of the garden, &c. and when thus rotted, is beneficial for all ſorts of ſoils, and is very enriching.

And as to cow or oxen Dung, although it is particularly beneficial in light looſe ſoils, yet, when well rotted it will alſo prove good manure for any; and with this and horſe or ſtable-dung, as alſo hogſtye-dung together, mixed, makes an excellent manure for moſt ſorts of land.

Hogs Dung being very fat, is by ſome recommended as the moſt beneficial of all ſorts of Dungs, and, when well rotteed, has often proved excellent for fruit trees, in a light ſoil, eſpecially for apples and pears, but when thoroughly rotted, may be uſed to advantage for all ſorts, in light dry land.

Sheep and deer Dung have been found great improvers of cold clayey land.

The Dung of pigeons and other poultry being hot and full of ſalts, is found good for cold wet clayey lands, but before uſing, it would be an advantage, if expoſed abroad in the dung-hill ſome conſiderable time to rot, ſweeten, and to mollify the fiery heat natural to thoſe Dungs; and if then mixed with light earth, ſand, or aſhes, to keep it from clinging, and then, after having lain ſix, eight, or twelve months, ſtrew it over the ground in autumn or winter in moderate quantities, being dug in lightly, it will tend much to facilitate vegetation in cold heavy ſoils.

Human ordure, mixed with other Dungs, and earths, by way of compoſt, and expoſed to the air ſome time, will prove beneficial to cold, ſour, ſtubborn land.

For other ſorts of Dungs, &c. uſed as manure, ſee MANURE.

All Dungs uſed as manure, ſhould be applied principally, either in autumn, winter, or ſpring; and if it is horſe or neats Dung or a mixture of both, or of hog's Dung, or the like, it ſhould be laid at leaſt from about three to ſix inches thick all over the ſurface; but on poor land, if double that thickneſs it will prove the more beneficial to the ground; but the hot fiery Dung of poultry ſhould be uſed more ſparingly, and that, only to cold, heavy land.

In digging or trenching dunged ground, the Dung ſhould be buried one ſpade, not more, ſo that if you trench two ſpades deep, always bury the Dung betwixt the firſt and ſecond ſpit.

Dungs for hot beds.—Horſe-dung, together with the wet litter of their ſtalls, is the only ſort capable of producing the effect of heat requiſite for hot-beds, but which property is found only in that which is newly made, or at leaſt that have not laid ſo long on the dung-hill as to begin to rot conſiderably, and has quite expended its heat. Preparatory to forming this Dung into hot-beds, the neceſſary quantity ſhould be caſt up in a heap, ſhaking and mixing the long and ſhort well together, and here it ſhould remain a week, twelve days, or a fortnight, to prepare all the parts to an equal quality, obſerving, if the Dung is new and ſtrawey, it will require to lie longer than older or ſhort Dung; and if the heap is turned over once or twice, the rank, unwholeſome ſteam and burning quality, will evaporate more effectually. See HOT-BEDS, &c. &c.

DWARF TREES, theſe are fruit trees graſted near the root, that they may form heads, not more than from about four to ſix or eight feet high.

Under this head may be conſidered not only Drawf-ſtandards, but alſo all ſorts of Dwarfs for eſpaliers, and walls, which are alſo graſted or budded low, to provide branches near the ground, ſo as to cover every part of the eſpalier or wall, from the bottom upward, moſt of which ſort of Dwarf-trees are graſted or budded upon Dwarf ſtocks, or ſuch as are but moderate ſhooters, particularly for Dwarf-ſtandards, to preſerve them as dwarfiſh as poſſible. See STOCKS. And in which, the graft or buds are inſerted, within about ſix, eight, or twelve inches of the bottom, and the firſt ſhoots from the graft or bud, are in ſpring, when a year old, headed down to five or ſix eyes, to force out lower ſhoots to form the firſt ſet of branches near the root, as a foundation for the upper part, and by ſhortening theſe alſo, as above, if neceſſary, a farther ſupply is produced, to give the tree its firſt regular form, whether as a Dwarf-ſtandard, or for eſpaliers, or walls. But as in this article we ſhall only treat of Dwarf-ſtandards, ſo for the other ſorts of Dwarfs, ſee ESPALIERS and WALL TTEES.

Dwarf ſtandards therefore, are formed at firſt as above, not trained fan-faſhion like eſpaliers,

eſpaliers, or wall trees, but promoted to branch out low every way into a circular head, without being trained to any kind of fence, and are therefore properly ſtandards, though of dwarfiſh ſtature.

Theſe were formerly in great eſtimation, and trained in three different ways or ſhapes, viz. 1. Concave Dwarfs; being trained concave or hollow in the middle, having all the branches ranged circularly around the ſtem in an aſcending direction, ſo as to form the heart of the tree hollow or concave. 2. Convex or conical Dwarfs, being trained convex or full in the middle, ſo as to form a cloſe conical head. 3. Horizontal Dwarfs, being trained horizontally, i. e. all the branches trained flat, or in a horizontal poſition, all around parallel to the ſurface of the earth; but the concave form is the moſt eligible; but neither of the methods are at preſent in much practice, and the mode of training Dwarfs in eſpaliers, is now almoſt univerſally adopted in their ſtead; which indeed, are every way preferable, both for convenience and bearing; however, a few trees ſhould be admitted in large grounds for variety, and may be diſpoſed ſingly, one here and there, upon large borders, or on open ſpaces of graſs ground.

They ſhould be no where planted nearer together than twenty feet, particularly the concave and horizontal Dwarfs.

The ſorts of fruit trees commonly uſed for Dwarf-ſtandards, are apples, pears, plums, cherries, and ſometimes apricots; but any ſort of fruit-trees may be trained in that form, as one direction ſerves for all.

The method of forming them is, and firſt of the concave Dwarfs.

To have proper concave Dwarfs, it is neceſſary to graft them upon Dwarf ſtocks, as before obſerved, that they may be moderate ſhooters, and be of as dwarfiſh ſtature as poſſible; as for example, apples ſhould be graſted upon paradiſe ſtocks, and pears upon quince ſtocks, &c. See STOCKS. And the graft or bud, to be inſerted within ſix or eight inches of the ground; ſo as the ſtem may not exceed a foot or fifteen inches in height, and may form branches within that diſtance of the ſurface of the earth.

Having therefore grafted or budded them as above, obſerve, that the firſt ſhoots from the graft or bud, are to be ſtopped or ſhortened in ſpring, when a year old, to about five or ſix inches in length; or to ſo many eyes or buds, from which to procure from four at leaſt, to ſix or eight ſtout lateral ſhoots, to give the tree its firſt regular formation. When theſe laterals are a year old, and about two feet long, they ſhould be then trained in a horizontal poſition in different directions on each ſide of the ſtem, by means of ſtakes; at the ſame time top the end of each ſhoot, and trim off the lower buds or eyes, to promote a farther ſupply of three, or more ſhoots only towards the ends of each of them; and this ſupply of ſhoots thus again procured, are, after having one ſummer's growth, to be trained gradually in an aſcending direction, at equal diſtances all around, ſo as to form the heart of the tree into a regular concave or hollow; to aſſiſt which, and effect a more regular concavity, ſome wide hoops muſt be placed within-inſide, ſupported by ſtakes; and as the branches advance in length, train them up to the hoops, ſuffering no branch to croſs its neighbour, but train them all parallel to each other, ſix or eight inches diſtance, in an aſcending poſition as aforeſaid; obſerving, if a farther ſupply of ſhoots are ſtill neceſſary to form the tree all around, at the above diſtance, then, ſhortening the laſt produced ſhoots muſt again be practiſed, either wholly or in part, as ſhall appear expedient, to force out, in the proper places, the quantity wanted; afterwards train the whole at full length as directed below in their general pruning, and they will then form all along their ſides, ſhort thick ſhoots ſcarce an inch long, called fruit-ſpurs, as hereafter mentioned.

As to their general pruning, obſerve, in the courſe of that operation, that after the tree is furniſhed with a proper quantity of branches to form the tree into its proper figure all around, as above-noticed, the ſhoots or branches are not afterwards to be ſhortened; obſerving however, that when neceſſary to ſhorten any, either to force out a farther ſupply of young wood to train up for bearers, or to preſerve uniformity, always make the cut on the inſide, ſo as to preſerve the uppermoſt eye, or that immediately next the cut, outward, that the leading ſhoot may advance in that direction, as hereby the concave form of the tree will be better maintained.

However, the ſhortening the ſhoots of theſe trees ſhould be ſparingly practiſed, particularly apples, pears, plums, and cherries, eſpecially after having obtained branches enough to form the tree all around, at ſix or eight inches diſtance, as before obſerved; for ſhortening promotes a great ſuperfluity of

ſtrong

ſtrong ſhoots, and prevents the branches from forming ſpurs or fruit-buds, i. e. ſhort thick ſhoots half an inch, or an inch long; for all theſe ſort of trees above ſpecified, moſtly produce their fruit upon ſpurs, ſee PYRUS and PRUNUS, which generally firſt form themſelves towards the extremity of the ſhoots or branches; ſo that by ſhortening, you cut away the parts where they would have firſt appeared, and inſtead thereof, ſtrong unneceſſary wood will ſhoot forth, and greatly retard the tree in forming for bearing.

Therefore obſerve the caution, never to practiſe ſhortening the branches of theſe kinds of Dwarf trees, but to promote a ſupply of more ſhoots when wanting, as above hinted, or take off cankered parts, or ſuch as are grown much too long, or that grow a-croſs the others; and which ſhould be done in the winter pruning, cutting ſuch parts down to the next moſt ſuitable ſhoot, properly ſituated to ſupply the place of the part cut away.

No branch muſt be ſuffered to grow a-croſs another, but when ſuch appears, let it be cut out, or ſo far retrenched as to preſerve due regularity.

All ſhoots riſing in the middle of the tree, that may interfere with the concavity, ſhould be annually taken off cloſe, either in the ſummer as they are produced, or in the winter pruning. Likewiſe, after the tree is formed and furniſhed with a proper quantity of branches all around at equal diſtances, all ſhoots ariſing from the ſides of the branches ſhould be alſo diſplaced annually, unleſs any ſhall appear neceſſary, to fill any preſent or apparent future vacancy, or to ſupply the place of any irregular, or worn-out branch; in which caſe, leave in the proper places ſome of the moſt promiſing beſt placed young ſhoots, training them up between the old branches; obſerving however, that all ſhoots evidently ſuperfluous, or unneceſſary, ſhould, if poſſible, be diſplaced in ſummer, according as they are produced, which will prove more beneficial both to the form and proſperity of the trees and fruit, than if wholly deferred till the winter; however, do not omit that operation annually, either in ſummer or winter, at either time cutting off all the above-hinted ſuperfluities quite cloſe, and not leave any ſtump, as from every eye of which ſhoots would ariſe and cauſe a great confuſion of wood.

If the tree produce vigorous ſhoots at its extremity, it is neceſſary to leave in ſummer ſome ſtrong lower ſhoots till winter, to check the luxuriance of theſe at top, then take them off according to the above rules.

Be careful at each pruning, to obſerve if there is any appearance of a vacancy, or any very irregular, ill-bearing, or old worn-out branch, or other wood that may want renewing; in which caſe, leave occaſionally ſome well placed young ſhoots towards the lower parts, training them up between the older branches to be coming on gradually to a bearing ſtate, to ſupply the place of bad ones, or any accidental vacancy.

Obſerve alſo at each pruning, to preſerve with the utmoſt care all the fruit-ſpurs, i. e. thoſe ſhort robuſt ſhoots of half an inch, or an inch or two long, for it is from theſe only we are to expect the fruit, which will be evident by obſervation; but if any of theſe are become very long, ragged, or ſtumpy, or crowd others of more eligible growth for bearing, it is proper to thin or regulate them occaſionally as you ſhall ſee neceſſary.

The principal pruning ſeaſons are, the ſummer pruning, which is performed any time in June or July, to clear out all evident ſuperfluous ſhoots of the year; and the winter pruning is any time from November to March, to clear out alſo all ſuperfluous ſhoots omitted in ſummer; and is alſo the only proper ſeaſon to prune out all large branches where neceſſary, either by being ſuperfluous, irregular, bad bearers, or decayed.

Convex or conical Dwarfs. To form theſe, they muſt be grafted or budded low, as directed for the concave Dwarfs, and the firſt ſhoots to be alſo ſhortened in ſpring, when a year old; to procure a further ſupply of ſeveral ſtout lower ſhoots, to form the firſt courſe of branches at about a foot or fifteen inches from the ground; and that, inſtead of forming the heart of the tree concave, like the former kind of dwarf, train the centre-ſhoot up the middle for a ſtem, and ſuffer it to branch out at every twelve or fifteen inches as it advances in height, training each ſet of branches a little horizontally.

Thus the tree may be formed into ſeveral ſets of branches, one above another, which ſhould be ſo ordered, that the lower-moſt ſet be extended the wideſt, and the next ſet immediately above it be a little ſhorter, the next ſhort than that, and ſo on to the uppermoſt ſet, whereby the tree will aſſume a beautiful conic form; and by obſerving nearly the ſame rules of general pruning, as laid down for the

the concave dwarfs, they will produce plenty of fine fruit.

Horizontal Dwarfs.—Theſe are graſted, within from about twelve or eighteen inches, to two feet of the ground, and their firſt ſhoots ſhortened, as for the concave and conical Dwarfs, to promote a regular ſupply of branches at that diſtance from the bottom; which, when about a yard long, are to be trained in a horizontal poſition, ſuffering no upright to advance in the middle, but train the whole perfectly flat or horizontal on every ſide of the ſtem, continuing them as they advance in length always in the ſame poſition, and thus they will ſpread themſelves circularly many feet each way, and produce abundance of fruit.

The ſame mode of pruning is to be here obſerved as directed for the concave Dwarfs, ſo that a repetition here would be ſuperfluous.

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# E.

EARTH.—Earth may be divided into three claſſes, ſandy, loamy, and clayey.

A good garden Earth may be either of a blackiſh, hazelly; or cheſnut-brown colour neither too light looſe and ſandy, nor partake too much of loam or clay, but is fattiſh, light pliant, and eaſy to work at all ſeaſons; and if three ſpades deep, it will be ſtill more beneficial for the purpoſe, though if there be eighteen inches or two feet depth of good ſtaple, it will do for moſt ſorts of eſculent plants, and others. as well as for almoſt all ſorts of fruit trees.

Sandy Earth.—All the light, looſe, open, and gravelly ſoils, whether black, grey, hazelly, or yellowiſh coloured, till the loam or clay is come at, may be deemed of the ſandy kind, and is capable of raiſing ſome certain plants; but having a mixture of loam or clay, and enriched with dung, it will produce all ſorts; for a vegetable planted either in ſand alone, or in a fat coherent glebe or Earth alone, receives ſcarce any growth, but where there is a juſt mixture of both, the maſs becomes fertile.

By means of ſand or ſandy Earth, ſtrong loam or clay is fertilized, the Earth being thereby rendered porous, and interſtices or ſpace maintained, by which the juices are prepared, and thrown off into the roots of the plants, and the fibres finds room to extend themſelves.

Sandy or gravelly ground eaſily admits both of heat and moiſture, and are apt to puſh ſeeds and plants much earlier in ſpring than ſtrong loamy or clayey ſoils.

But ſandy land is liable to theſe inconveniencies, that being ſometimes very light and open, it either does not retain a due portion of moiſture, or ſometimes retains it too long, eſpecially where there is clay at bottom; ſo in theſe caſes, is apt either to parch or chill too much.

Loamy Earth.—This is that ſort of Earth which is a mixture of clay and ſand, commonly of a yellowiſh or hazelly colour, and of a ſoft, fat, and ſlippery temperament, not ſo cloſe a texture as clay, nor too looſe and ſandy, but of a middle nature between, and is at all times eaſy to dig and rake, and will readily diſſolve by froſt and rain.

But ſome diſtinguiſh a true loam, or brick-earth, as that which partakes more of clay than ſand.

A good garden loam however ſhould be ſuch a juſt conſiſtence as is pliable to work, and ſuch as will not ſtick obſtinately to the ſpade, rake, and fingers, &c. at every flaſh of rain, nor cruſt or chap in dry weather.

Loamy Earths, anſwering the above deſcriptions, are in many places the moſt common ſuperficial or top Earth, going frequently one, two, or three ſpades deep, and is one of the moſt beneficial ſoils for almoſt all ſorts of plants and trees. See COMPOSTS and LOAM.

Clayey Earth.—Clay is a ſtrong, cold, heavey, moiſt Earth, liable to coaleſce, and gather into a coherent and compact maſs, having but

but little ſpace or interſtice, and Earth thus embodied, and as it were, glued together; does not eaſily give out thoſe ſalts contained in it, nor can the fibres of plants make their way through it in queſt of proper nutriment, and therefore, ſuch a ſoil of itſelf, is no ways diſpoſed to nouriſh vegetables; but if with ſuch an Earth, ſome ſharp indiſſolvable ſand, or ſome other body of ſimilar quality, and light hot dungs be added, and well intermixed by proper digging, and breaking into ſmall particles, they will keep the pores of the clay open, and render the whole looſe and incompact, whereby the juices will have room to aſcend, and the plants thereby receive proper nouriſhment.

All binding Earths, from the loam, till the ſtiffneſs of chalk may be come at, may be reckoned of the clayey kind, and require the aid of light Earths, aſhes, and light dungs to meliorate them for the buſineſs of vegetation.

If the Earth of your garden is of a ſandy looſe temperature, add loam and other heavy ſubſtances by degrees, and a good portion of moiſt rotten dung, particularly the dung of oxen, cows, and hogs, and of old hot-beds, &c. but any good moiſt rotten dung will improve this kind of ſoil.

And if your garden is ſtrong, ſtubborn, loamy, or clayey, meliorate it by ſand, and other light materials, of a fiery, ſprightly nature, together with plenty of dry rotten dung.

EBENUS, Ebony.

It conſiſts of one ſhrubby exotic for the greenhouſe.

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX, is monophyllous, and five-parted at top. COROLLA is papilionaceous, the vexillum roundiſh and erect, the wings ſmall and roundiſh, and ſhort aſcending keel. STAMINA, ten diadelphous filaments, and ſimple antheræ. PISTILLUM, an oblong germen, riſing ſtyle, and ſimple ſtigma. PERICARPIUM, an oval pod, and kidney-ſhaped ſeed.

The ſpecies is,

EBENUS, *Cretica.*

*Cretan Ebony.*] Ebenus with a ſhrubby ſtem, branching three or four feet high, hoary five-lobed hand-ſhaped leaves, and all the branches terminated by thick ſpikes of purple papilionaceous flowers, in June and July, and ſometimes ripe ſeeds in autumn.

It ſhould be kept always in pots, to move to the greenhouſe in winter.

It is propagated by ſeeds ſown in autumn or ſpring, in pots of light earth, which ſhould be placed in a frame during cold weather, and when the plants are two or three inches high, plant them in ſeparate pots, and manage them as other exotics of like quality. See GREENHOUSE PLANTS.

ECHINOPS. Hedge-hog thiſtle, commonly called globe-thiſtle.

This genus furniſhes ſome hardy herbaceous perennials for the pleaſure-ground, producing annual ſtalks, from two to four or five feet high, divided leaves, and terminated by globular heads of flowers.

Claſs and order, *Syngeneſia Polygamia Segregatus.*

*Characters.*] CALIX a polyphyllous, ſcaly general cup, and the partial one of the florets, is oblong, imbricated and perſiſtent. COROLLA, each floret monopetalous, funnel-ſhaped, five-parted at the top, and reflexed. STAMINA, five filaments and cylindric antheræ. PISTILLUM, an oblong germen, ſlender ſtyle, and double ſtigma. PERICARPIUM, none. SEMEN, one oval-oblong ſeed, lodged in the calix.

The principal ſpecies are.

[1]ECHINOPS, *Spherocephalous.*

*Spherical-headed Echinops, or greater Globe-Thiſtle.*] Echinops with perennial roots, upright annual ſtalks four or five feet high, garniſhed with long, jagged, deeply-divided, ſpinous, woolly leaves, white underneath, and the ſtalks ſurmounted by blue flowers, collected into large globular heads in June and July.

*Variety.*] With white flowers.

[2]ECHINOPS *Ritro.*

*Ritro, or Smaller Globe-Thiſtle.*] Echinops with creeping perennial roots, upright ſtrong annual ſtalks two feet high; deeply divided, many-pointed prickly leaves, ſmooth on the upper ſide, and the ſtalks and branches terminated by ſmalliſh globular heads of deep blue flowers.

*Variety.*] With white flowers.

Theſe two perennials and varieties may be employed in large gardens to encreaſe the variety; they will proſper in any ſoil: they are propagated abundantly by ſeed ſown in autumn or ſpring, in any common earth, and raked in: the plants may be tranſplanted into the different compartments.

If the ſeed is ſuffered to ſcatter, many plants will riſe naturally.

EDGINGS. Theſe are ranges of very ſmall dwarfiſh ever-green plants, as box, thrift,

thrift, &c. clofely planted along the edge of borders or beds, ſerving both for uſe and ornament.

Edgings are particularly neceſſary to the edges of ſuch borders or beds as immediately verge walks or alleys of gravel, ſand, ſhells or other looſe materials; and are uſeful to form and preſerve a boundary diſtinction betwixt the borders and walks, and to preſerve the earth of the borders from being forced out upon the walks or alleys, and the ſoil of the walks from the borders; both of which would otherwiſe be the caſe, leſs or more, every time of doing the neceſſary work, and at every hard ſhower of rain: Edgings are therefore particularly neceſſary in flower-gardens, and to the borders immediately verging principal walks, to maintain uniformity and neatneſs, and, conſidered as ornamental, that being evergreen, and if planted in a cloſe neat range along the edge of the border, all of an equal width, not more than two inches broad, and one or two high, and always kept within the compaſs of about three inches in width and height, without gaps and irregularities, but all the way cloſe, and even at ſides and top, they have a pretty effect, whether box or thrift, &c. and as ſome ſorts of plants proper to be employed for Edgings, are of the flowery tribe, ſuch as thrift, daiſies, pinks, &c. they, beſides the property of being evergreen, are very ornamental in their flowers, which, of each ſort, are numerous, and continue ſix weeks or two months in great beauty.

But the beſt Edging in the world is the dwarf ſhrubby box. (*Buxus Suffruticoſus,*) it being the moſt effectual, moſt eaſily kept in order, and the moſt durable, retains its leaves and full verdure at all ſeaſons, proſpers in all ſoils and ſituation, is never hurt by any weather, and will endure many years, always cloſe and regular, with the culture of ſhearing or clipping once or twive every ſummer at top and ſides. See Buxus.

The next to box for Edgings, is thrift, (*Statice Armeria*), which alſo grows very cloſe, low, and in verdure all the year; and flowers beautifully two months in ſummer, but being rather apt to ſpread ſoon out of bounds, requires to be reduced, by cutting in conſiderably on each ſide, or by replanting it a freſh every two or three years; and its general culture as an Edging is, to trim it a little with garden-ſhears on each ſide and top every ſummer, as ſoon as done flowering, cutting off alſo all the withered flower-ſtalks, performing it always in moiſt weather. See Statice.

Daiſies, pinks, catchfly, and ſeveral other low herbaceous evergreen flowery perennials are alſo ſometimes employed for Edgings, which have a pretty effect when in flower; but as in one year they ſpread greatly out of compaſs as Edgings, ſhould be taken up and replanted every ſpring or autumn, but more particularly the daiſies; and the others, if they ſtand longer than one year, ſhould be cut in on each ſide annually after flowering, to preſerve uniformity.

Sometimes ſome ſorts of dwarf buſhy annuals are ſowed for ſummer Edgings in ſmall gardens, ſuch as the dwarf Virginia ſtock, hearts-eaſe, or *viola tricolar*, candy tuft, and ſeveral other low buſhy annual flowers; but the former of them is the moſt ſuitable for an Edging, as it grows low, buſhy, and does not ramble, is very flowery, and continues long in bloom.

Several ſorts of ſhrubby aromatics are alſo uſed for Edgings, as thyme, ſavory, hyſſop, ſage, lavender, and rue, all of which are evergreens, and may be kept low by cloſe ſhearing; but then they become woody, ſtubbed, and naked; but theſe are alſo ſometimes planted as Edgings in kitchen gardens, for oeconomical purpoſes.

Parſley alſo forms a good evergreen Edging, for the edges of the quarters and borders of kitchen gardens; and if the true curled ſort is ſowed, it will be very ornamental, as well as profitable.

As to the method of planting or forming Edgings; if box, the plants are generally planted in ſmall perpendicular trenches, placing them cloſe together, as at once to form a complete Edging. See Buxus. Thrift, daiſies, pinks, &c. are commonly planted by dibble, at about two or three inches diſtance in the line, though, to form a compact Edging at once, they may be planted ſo cloſe as to touch each other; pink Edgings may alſo be formed by ſowing the ſeed in a drill along the edge half an inch deep, ſo ſuffer the plants to remain. Annual flower Edgings are alſo formed in the ſame manner: thyme, ſavory, and hyſſop Edgings may alſo either be formed by ſowing the ſeed, or by plants or ſlips; ſage and lavender, chiefly by planting young ſlips; and rue the ſame, or by ſeed.

All Edgings, the ſhrubby kinds in particular, ſhould be neatly ſhorn or clipped with

with garden-ſhears, at top and ſides every year in ſummer, and ſome ſorts require it twice in that time, to preſerve them perfectly neat, ſuch as box, and moſt other ſhrubby kinds.

Never ſuffer box Edgings to exceed two or three inches in width, nor above three or four high; and thriſt and the other herbaceous Edging to get more than three or four inches wide.

Nor ſuffer the aromatic kinds, if in pleaſure-grounds, to exceed five or ſix inches high, and three or four broad.

For particulars in the different ſorts here mentioned, ſee their reſpective genera.

ELÆAGNUS, Oleaſter or Wild-Olive. It furniſhes two ornamental, deciduous ſhrubs for the ſhrubbery and ſtove, garniſhed with narrow ſilvery leaves, and ſmall apetalous flowers.

Claſs and order, *Tetrandria Monogynia.*

*Characters.*] CALIX is monophyllous, bell-ſhaped, quadrifid, and the inſide coloured. COROLLA, none. STAMINA, four filaments, and oblong incumbent antheræ. PISTILLUM, a roundiſh germen, ſimple ſtyle, and ſingle ſtigma. PERICARPIUM, an oval drupaceous fruit, incloſing an oblong obtuſe nut.

The ſpecies are,

[1]ELÆAGNUS *Anguſtifolia.*

*Narrow-leaved Oleaſter.*] Elæagnus, with an upright woody ſtem, branching twelve or fourteen high; narrow, ſpear-ſhaped, ſhining, ſattiny leaves, three or four inches long, and ſcarce half an inch broad; and from the axills, ſmall flowers having ſilvery ſtudded cups, yellow within, ſucceeded by ſmall olive-ſhaped fruit.

[2]ELÆAGNUS *Spinoſus.*

*Thorny elliptic-leaved Oleaſter.*] Elæagnus, with an upright woody ſtem, branching twelve or fourteen feet high; elliptical, ſilvery, downy-leaves, two inches long, and near one broad, ſharp thorns under each leaf; and ſmall flowers, having the calix yellow within, ſucceeded by olive-ſhaped fruit.

Both theſe trees merit culture, the firſt for the ſhrubbery, the ſecond for the ſtove; their ſilvery-leaves render them very conſpicuous, and effects a delightful variety.

Their propagation is eaſily effected by layers of their young ſhoots, alſo by cuttings, which will be rooted in one year, and may then be tranſplanted, placing the hardy kinds in the nurſery, to have two or three years growth, when they will be fit for the ſhrubbery.

EPHEDRA, Shrubby Horſe-tail.

There is but one ſpecies, a low ſhrubby ruſhy-leaved evergreen for the ſhrubbery.

Claſs and order, *Dioecia Monodelphia.*

*Characters.*] Male and female flowers on ſeparate plants, the males collected into an amentum; but they rarely flower in England.

The ſpecies is;

EPHEDRA *Diſtachya.*

*Shrubby Horſe-tail.*] Ephedra with a low ſhrubby ſtalk, branching two feet high, having many ſwelling joints, ſending forth oppoſite, narrow ſhoots, branching out into long ruſhy tufts, opening like leaves, there being no other.

This ſhrub may be employed in the fronts of ſmall ſhrubbery clumps; its ſingularity will encreaſe the variety.

It is propagated plentifully by ſuckers or off ſets, ariſing from its creeping roots, which may be tranſplanted in February or March.

EPILOBIUM, Willow-herb, or French Willow.

This genus furniſhes two herbaceous flowery perennials for the full ground, producing annual ſtalks of three or four feet ſtature, narrow leaves, and terminated by long ſpikes of quadripetalous flowers.

Claſs and order, *Octandria Monogynia.*

*Characters.*] CALIX, four oblong, pointed, coloured leaves. COROLLA, four roundiſh cruciforme petals. STAMINA, eight filaments alternately ſhorter, and compreſſed antheræ. PISTILLUM, a long cylindric germen under the corolla, ſlender ſtyle, and quadrifid revolute ſtigma. PERICARPIUM, a long, cylindric, furrowed, quadrilocular capſule and oblong ſeeds crowned with down.

The ſpecies are.

[1]EPILOBIUM *Anguſtifolium.*

*Narrow-leaved Epilobium.*] Epilobium with very creeping perennial roots, upright flower-ſtems, branching erectly four feet high, long ſpear-ſhaped leaves placed irregularly, and all the branches and main ſtem, terminated by long erect ſpikes of purple flowers, of very ornamental appearance.

*Varieties.*] With white flowers,—white purple-ſtriped flowers—with broad leaves and white flowers.

EPILOBIUM *Hirſutum.*

*Hairy Epilobium.*] Epilobium with very creeping perennial roots, upright hairy ſtalks, branching erectly, three feet high, ſpear-ſhaped, ſawed, decurrent, hairy leaves placed oppoſite, and all the branches and main ſtem terminated by erect ſpikes of purple flowers.

Both theſe ſpecies of *Epilobium* grow naturally in ſhady moiſt places in many parts of Britain, &c. the firſt are inhabitants of ſhady woods, the other, the ſides of watery ditches, and are great ramblers both by root and ſtalks; but being ornamental in their mode of flowering, have been long admitted into gardens to encreaſe the collection of flowery perennials, and are good furniture for large borders, but are peculiarly adapted for ſhady moiſt places; they flower abundantly in July and Auguſt, continuing a month or ſix weeks.

They obtained the name of willow-herb from the great reſemblance of their leaves to thoſe of the willow.

Both ſpecies are propagated in great plenty by their creeping roots, in ſpring or autumn, which may be divided and planted at once, where they are to remain, and they will flower at their uſual ſeaſon.

EPIMEDIUM, Barrenwort.—It furniſhes one low herbaceous flowery perennial.

Claſs and order, *Tetrandria Monogynia.*

*Characters.*] CALIX, tetraphyllous and deduous. COROLLA, four cruciform oval petals, and four large cup-ſhaped nectariums. STAMINA, four filaments, and bilocular antheræ. PISTILLUM, an oblong germen, ſhort ſtyle, and ſimple ſtigma. PERICARIUM, an oblong unilocular capſule and many oblong ſeeds.

The ſpecies is,

EPIMEDIUM *Alpinum.*

*Alpine Epimedium.*] Epimedium with creeping perennial roots, crowned by many ſtalks eight or nine inches high, dividing at top by threes, each diviſion garniſhed with heart-ſhaped ſtiff folioles, and flower-ſtalks ſix inches high, dividing into ſmaller, each ſupporting three reddiſh cruciform flowers in May.

It delights moſt in ſhady borders, and may be propagated at pleaſure by its creeping roots.

ERYNGIUM, Eryngo, or Sea Holly.

This genus compriſes ſeveral hardy, herbaceous, flowery perennials, producing ereſt ſtalks, from one to three feet high; ſimple, entire, and divided prickly leaves; and the ſtalks terminated by roundiſh aggregate heads of quinquepetalous flowers.

Claſs and order, *Pentandria Digynia.*

*Characters.*] CALIX, a conical receptacle, common to many florets, having a five-leafed general involucrum, and each floret a pentaphyllous calix coloured above. COROLLA, each floret is of five inflexed petals, collected into a roundiſh uniform head. STAMINA, five filaments and oblong antheræ. PISTILLUM, hairy germen, two ſtyles, and ſimple ſtigmas. PERICARPIUM, an oval two-parted fruit to each floret, having each one taper ſeed.

The principal ſpecies are:

ERYNGIUM *Maritimum.*

*Maritime Eryngo, or Sea Holly.*] Eryngium with creeping, penetrating, fleſhy, perennial roots crowned by roundiſh, plaited, ſtiff, ſpinous-edged leaves, and between them upright ſtalks a foot high, garniſhed with ſmall roundiſh leaves, and terminated by roundiſh heads of whitiſh blue flowers.

ERYNGIUM *Amethyſtinum.*

*Amethyſtine-coloured Eryngo.*] Eryngium, with perennial roots, crowned with trifid, hand-ſhaped, many-pointed leaves, ſomewhat pinnated at the baſe; upright ſtalks two feet high, garniſhed with many-parted ſpinous leaves, and terminated at top by roundiſh heads of amethyſtine or purple violet-coloured flowers.

*Variety.*] With pale amethyſtine heads of flowers.

ERYNGIUM *Planum.*

*Plane leaved Eryngo.*] Eryngium with downright perennial roots, crowned with oval plane leaves, crenated on the edges, upright blue ſtalks two or three feet high, garniſhed with many-pointed ſpinous leaves, and terminated at top by oval heads of amethyſtine blue flowers.

*Variety.*] With ſtalks white upward, and white heads of flowers.

ERYNGIUM *Alpinum.*

*Alpine Eryngo.*] Eryngium with perennial roots, crowned with oblong heart-ſhaped leaves, upright ſtalks branching each way two or three feet high, adorned with deeply divided, many-pointed leaves, all ending in ſpines, and all the branches and main ſtalk terminated by conical light blue heads.

ERYNGIUM *Aquaticum.*

*Aquatic American Eryngo.*] Eryngium with perennial roots, crowned with long ſword-ſhaped, ſtiff, ſawed, ſpinous leaves a foot long, and between them an upright ſtalk two feet high, terminated by oval, whitiſh-blue, heads of flowers.

All theſe ſpecies of *Eryngium* are hardy perennials, the root durable, but annual in ſtalk; the firſt of which is a maritime plant, growing naturally on the ſea ſhores in many parts of Britain, &c. the ſecond, third, and fourth inhabit mountainous places of the continent;

tinent, and the fifth is of America; all of which are retained in curious gardens, as plants of ſingularity and ornament.

The flowers of all the ſorts are collected into cloſe roundiſh heads at the top of the ſtalks, each head compoſed of many florets. See the *Characters*.

They all flower principally in July, and the ſeeds ripen in September.

All the ſorts ſucceed in any of the borders, or other compartments, though the firſt ſort is the moſt proſperous in gravelly or ſandy ſoils.

They are propagated by ſeeds, ſowed either in autumn or ſpring, in a bed or border, and raked in, the autumn ſowing generally comes up ſtrongeſt in ſpring following; and in autumn after tranſplant the plants into the places where they are to remain to flower.

ERYTHRINA, coral-tree (*Corallodendron.*)

This genera conſiſts of ſhrubby, flowery, exotics for the ſtove, adorned chiefly with trifoliate, or three-lobed leaves, and ſcarlet ſpikes of papilionaceous flowers.

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX is monophyllous, tubular, and entire. COROLLA, is papilionaceous, and of five petals, the ſtandard ſpear-ſhaped and very long; the wings oval and ſhort; and the keel dipetalous. STAMINA, ten diadelphous filaments, and arrow-headed antheræ. PISTILLUM, a pediculated ſubulate germen, and ſtyle, and ſimple ſtigma. PERICARPIUM, a long ſwelling, unilocular pod, and kidney-ſhaped ſeeds.

The principal ſpecies:

[1]ERYTHRINA *Corallodendrum.*

*Corallodendron, or Smooth Coral-tree.*] Erythrina with a tree-like woody ſtem, branching irregularly ten or twelve feet high, ſmooth trifoliate leaves, having heart-ſhaped lobes, and from the ends of the branches ſhort thick ſpikes of beautiful ſcarlet flowers.

[2]ERYTHRINA *ſpinoſa.*

*Spinous Coral-tree.*] Erythrina, with a tree-like woody ſtem, branching ten or twelve feet high, armed with ſpines, trifoliate prickly leaves, and red ſpikes of flowers.

[3]ERYTHRINA *picta.*

*Black thorned Coral-tree.*] Erythrina with ſhrubby ſtalks, dividing into branches, five or ſix feet high, ſtrongly armed with black ſpines; trifoliate ſmall leaves, and pale ſcarlet ſpikes of flowers.

[4]ERYTHRINA *herbacea.*

*Herbaceous Erythrina.*] Erythrina with a thick woody root, ſending up herbaceous ſtalks annually in ſpring, two feet high, garniſhed below with trifoliate narrow-pointed leaves, and terminated by long ſcarlet ſpikes.

All theſe plants being natives of hot countries, in Africa and America require the conſtant ſhelter of a ſtove in England, ſo muſt always be kept in pots, and retained in that department.

They flower here in our ſtoves, in ſummer are extremely beautiful, but are not ſucceeded by ſeeds in this country.

All the ſorts are propagated by ſeed, which are annually imported hither from Africa and America. Sow them half an inch deep in pots of light rich earth, which plunge in the bark-bed of the ſtove, &c. and when the plants are two inches high, prick them in ſeparate ſmall pots, plunging them alſo in the bark-bed; give frequent waterings, and as they encreaſe in growth ſhift them into larger pots.

ERYTHRONIUM, Dog's Tooth.

*(Dens Canis.)* or Dog's Tooth Violet.

The plants are low, herbaceous, flowery perennials for the full ground, riſing four or five inches high, terminated by hexapetalous flowers.

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX, none. COROLLA, ſix oblong petals, reflexed and ſpread open to their baſe. STAMINA, ſix ſhort filaments and oblong antheræ. PISTILLUM, a turbinated germen, ſimple ſtyle, and triple ſtigma. PERICARPIUM, a ſub-globoſe trilocular capſule, and many oval flat ſeeds.

There is but one ſpeces, which however, admits of ſeveral varieties, all of the flowery tribe.

The ſpecies is,

ERYTHRONIUM *Dens Canis.*

*Dog's Tooth,* (*Dens Canis.*) Erythronium with oblong, tooth-ſhaped, fleſhy, white perennial roots, crowned by two oval, purple and white ſpotted leaves, united at their baſe, and between them, an upright naked purple ſtalk, four inches high, terminated by one drooping flower, having ſix ſpear-ſhaped reflexed petals, of different colours in the varieties.

*Varieties are.*] Dog's Tooth with white flowers—with purple flowers—with pale red flowers—dark red flowers—crimſon flowers—yellow flowers, but rare—and dog's tooth with narrow leaves and flowers of the above colours.

All theſe varieties are hardy, durable in root, but annual in leaf and ſtalk, which riſe early in ſpring, and flower in April, but rarely furniſh good ſeeds in England; they may be all employed to adorn the fronts of

borders,

borders, planting them in ſmall patches, in which they will make a good appearance.

Their propagation is by off-ſets from the roots, when their leaves decay, from June till September.

ESPALIERS, ranges of dwarf fruit trees, trained to a trillage of wood-work in ſuch order as to form a kind of hedge.

Eſpaliers are commonly arranged in a ſingle row round the boundaries of the quarters or principal diviſions of the kitchen garden, there ſerving a double or treble purpoſe, both profitable, uſeful, and ornamental; they produce plentifully of large fine fruit, without taking up much room, or any ways incommoding the ground, and being in a cloſe range, hedge-like, they wonderfully ſhelter the eſculent crops in the quarters; and having borders immediately under them on each ſide, afford different aſpects for different plants, as they ſhall require at different ſeaſons of the year; as in the winter for ſhelter; the ſpring for forwardneſs; and the ſummer for ſhade; and as to the ornament and variety, what can be more delightful in ſpring, in the excurſion of the walks, than the charming appearance the trees make when covered with their ſnowy bloom, differing in themſelves, in thoſe of different genera, ſpecies, and varieties; in ſummer, to ſee the fruit of the different ſorts advancing gradually to perfection; and in autumn, how pleaſing to find the various kinds arrive ſucceſſively at maturity: and as the trees are arranged all of an equal height, not exceeding ſix or ſeven feet, cloſely furniſhed with branches ranged at regular diſtances one above another, from the very ground upward, the fruit hereby exhibits itſelf to great advantage, and being low, and the branches fixed, is not liable to be blown down by wind.

An Eſpalier has this advantage over a wall tree, that it has liberty to form branches or fruit ſpurs on both ſides, which in the wall-tree cannot be effected but on one.

The ſorts of fruit uſually employed to form Eſpaliers, are principally apples, pears, and plums; but ſeveral other ſorts may alſo be uſed to encreaſe the varieties, as quinces, apricots, cherries, almonds, mulberries, vines, figs, filberds, &c.

Obſerve always however, to contrive all thoſe trees in the ſame line or range, that are nearly of the ſame growth, for the ſake of uniformity.

They ſhould be planted principally on thoſe borders ſerving as the immediate outer boundary to the quarters of the kitchen garden, and immediately verging the principal walks; they may alſo be planted in pleaſure grounds, &c. if thought convenient. The width of the borders may be about ſix feet, and the line of Eſpaliers placed four feet at leaſt, from the outer edge, and eighteen or twenty diſtant in the row, eſpecially for apples, pears, and plums, though twenty-five feet is not too much; but the trees planted at that diſtance, taking a long time before they approach each other to fill the Eſpalier, they appear ſtraggling and irregular, that few perſons plant them more than eighteen or twenty feet aſunder; if however they are planted only fifteen or eighteen feet diſtance, they will meet and form a cloſe Eſpalier ſooner by ſome years, and when they begin to interfere and incommode each other, the interfering branches of every other tree may be gradually cut away annually in winter-pruning, to give the intermediate trees room to advance and meet each other, and at laſt the others may be taken quite away, and the remaining trees ſtanding at thirty or ſix and thirty feet diſtance will have full ſcope to ſpread.

*Their general training and planting.*

All trees intended for Eſpaliers, that are propagated by grafting and budding, ſhould be grafted or budded within ſix inches of the ground, to procure lower branches to furniſh the Eſpalier, quite from the bottom regularly upward; and the firſt ſhoots from the graft or bud, ſhould alſo in ſpring, when a year old, be headed down within five or ſix inches of the graft, to force out a ſupply of five, ſix or more good ſhoots at that part, for the reaſon juſt mentioned; and whether the trees are then in the nurſery or planted in the Eſpalier, its ſhoots or branches ſo obtained, ſhould, the ſame ſummer or autumn, when eighteen inches or two feet or more long, be trained along as they advance to ſtakes placed for that purpoſe, laying the ſhoots to the right and left horizontally in the poſition proper to give them the firſt neceſſary form as Eſpalier-trees; if the trees are raiſed in nurſeries for ſale, the above practice is eligible, whereby the trees are rendered more ſaleable, and their value encreaſed; and if the firſt heading does not furniſh the ſupply of lower branches required, you may practiſe a ſecond heading, either in whole, or only ſome of the middle-moſt ſhoots, as you ſhall judge neceſſary; afterwards they muſt be trained all principally at full length.

When the trees in the nurſery are from two

to four or five years old from the graſting or budding, being furniſhed with ſix, eight, ten, or more good branches near the bottom, properly ſituated for ranging two ways, according to the line of the Eſpalier, they are then fit for planting out finally for that purpoſe, obſerving the diſtances as before-mentioned. If apples and pears upon dwarf ſtocks, fifteen or eighteen feet may be ſufficient; but if upon free ſtocks, twenty-one feet at leaſt is neceſſary: plums ſhould alſo be planted eighteen feet diſtance at leaſt, in the line; cherries, apricots, figs, mulberries, vines, &c. never leſs than fifteen diſtance, but if eighteen the better: as ſoon as they are planted, place ſtakes, ranging the way of the row, and to which tie the branches with oſier twigs, thoſe of each tree horizontally to the right and left, keeping an equal number on each ſide, at ſix or eight inches diſtance one above another, and at full length; except a farther ſupply of more branches may be wanting, to furniſh the bottom and middle of the tree, then ſhortening is to be practiſed according to the rules afore-mentioned, to obtain the proper ſupply; afterwards train all the branches at full length, till all thoſe of each tree meet, and all redundant ſhoots more than the allotted horizontals are to be diſplaced.

Another method of forming Eſpaliers, ſometimes practiſed, is, after having headed down the firſt ſhoots, as above ordered, and ſuppoſe the trees in conſequence furniſhes about three bottom ſhoots, the two ſide ones are trained horizontally, the way of the Eſpaliers, and the middle one is trained upright; if five ſhoots, two muſt go to each ſide, and the middle one perpendicular: this perpendicular ſhoot muſt ſtill be directed upwards, to furniſh more lateral ſhoots for horizontals, which muſt be trained horizontally to each ſide, as above, ſtill continuing your upright in the middle; obſerving however, if the upright ſhoot ſhould not throw out horizontals low enough, it ſhould be ſhortened, whereby it will furniſh freſh ſhoots at any deſired height, two or four of which, according to the number produced, are to be uſed for horizontals, and one ſtill directed up the middle for a ſtem, and ſo continue encreaſing your number of horizontals annually, ranging from each ſide of the ſtem, at ſix or eight inches one above another, from bottom to top of the Eſpalier.

In planting Eſpaliers, in reſpect to the treillage for training the branches upon, you may either only place four or ſix common ſtakes to each tree, in a line, juſt to train the branches the firſt two or three years, till the trees are ſomewhat advanced; then taking theſe away, form a regular treillage-work, as directed below; or if you are anxious to preſerve uniformity, a general treillage may be formed at once, at firſt planting of the trees.

Theſe treillage-works for the above purpoſe, may be of different degrees of taſte for uſe and ornament, according to your fancy or convenience: the cheapeſt and the ſooneſt made, is that of ſtraight ſtakes driven into the ground a foot diſtance, and ſawed level at top, five or ſix feet high; and ſlips of deal, or poles arranged along the top the whole length, and ſo train the branches of the trees along, from ſtake to ſtake.

But for the ſake of ornament, a regular frame or treillage may be formed of ſquare timbers, and to have it more durable, the principal poſts might be of oak, two or three inches ſquare, and rails carried from poſt to poſt, the firſt about eighteen inches from the bottom, one at top, and a third in the middle ſpace; then thin ſquare ſlips of lath, or ſmall aſhen poles, or the like, are fixed upright to the rails on the ſide next the trees, a foot aſunder, and paint the whole with oil-colour, to render it more ornamental and durable.

To either of the above treillage-work, the Eſpalier-trees are to trained in a regular manner, bringing the lowermoſt branches down horizontally within eight or ten inches of the ground, tying them to the uprights of the treillage; the next courſe ſix or eight inches above theſe, in the ſame poſition; the ſame of the next and every ſucceeding courſe all the way up, preſerving an equal number on each ſide, ranging exactly in the ſame horizontal poſition, and diſtance from bottom to top, training them always along at full length, except, as aforeſaid, there be a want of wood in any part; then, to force out the ſupply wanted, ſhorten ſome contiguous ſhoots to five or ſix inches, either the ſame ſummer it is produced, in June, otherwiſe not till ſpring following, and ſo continue every year encreaſing the number of horizontals, and place them properly till the trees are furniſhed with branches one above another, from bottom to top of the treillage.

*Their general pruning.*

As to the general pruning of Eſpalier-trees, obſerve for one thing, the branches are for the general part to be trained always at full length, for ſhortening more than juſt

neceſſary

neceſſary to procure an occaſional ſupply of wood, would not only produce a confuſion of branches, but as the trees always produce their fruit upon ſpurs, as obſerved in the article DWARF TREES, which, if the branches are trained at full length, generally firſt form themſelves toward the upper part, and gradually along the ſides at each eye; that by ſhortening, it would cut away the ſaid firſt fruitful parts, and from the lower eyes, that inſtead of forming ſpurs, force out ſtrong unneceſſary wood, and ſcarce any fruit; and this is the reaſon we ſee ſo many ill-formed Eſpalier-trees, many people thinking ſhortening the ſhoots is neceſſary to ſtrengthen them as they call it, and hereby the tree throws out vaſt quantities of wood every ſummer, which they either then, or in winter, or ſpring pruning, cut out, generally leaving a ſtump of each ſhoot about an inch or two long, and from every eye of theſe ſtumps, more ſtrong ſhoots riſe the year following, and theſe are alſo ſtumped off in the ſame manner, and ſo they continue from year to year, by which means the tree is filled with large cluſtering ragged ſpurs, formed entirely of the ſtumps of ſhoots: therefore, always keeping in mind to continue all the ſhoots and branches principally at full length; and when neceſſary, to cut out any ſuperabundant wood, always take it off quite cloſe, never leaving any ſtump, and conſtantly encourage the fruit ſpurs, which are natural ſhoots of from about half an inch to one or two in length; obſerving however, when any of theſe are worn out, or grown cankery, or become very long, as to project conſiderably foreright, they ſhould be cut out cloſe, to make room for thoſe of better growth.

Eſpaliers ſhould have two principal dreſſings annually, i. e. ſummer and winter pruning.

In ſummer the trees often produce numbers of ſhoots more than are wanted, or that can be trained in; therefore, keeping in mind the proper diſtances and general poſition of the neceſſary branches to form each tree, begin early in June, and clear off all ſuperfluities, as they are produced, that is, all ſore-right ſhoots iſſuing from the front and back of the branches; and thoſe of very luxuriant growth, ſhould always be diſplaced, rubbing or cutting them off cloſe; not however reducing any of thoſe ſhoots produced immediately from the end of the branches, which muſt be left entire, to extend the branch in length, and form a further ſupply of fruit-ſpurs. All other ſhoots, however good and well placed, ariſing from the ſides of the horizontals, and that are evidently ſuperabundant, i. e. more than what can be trained in, conſiſtent with the allotted diſtances, and regular poſition of the general horizontals or bearing-branches, ſhould alſo be taken off; obſerving however, to preſerve here and there a good ſhoot towards the lower part of the branches, in the moſt vacant ſpaces, or where bad branches occur, training them up between at full length till winter pruning; and if then not wanted, may be cut out: for it is neceſſary always, at any rate, to leave ſome as a reſerve till winter, in caſe of any unforeſeen vacancy happening. In the above manner go over the Eſpalier-trees of all ſorts twice every ſummer at leaſt, the firſt time early in June as aforeſaid, and again in July. In the firſt dreſſing in June, which if there are any vacancy want filling, you may pinch any contiguous ſtrong young ſhoot of the year, to three or four eyes, whereby it will furniſh the like number of ſhoots the ſame ſeaſon, which you may train into the vacant ſpace.

The above ſummer dreſſings are not only beneficial to the trees, but, clearing out uſeleſs wood, admits the ſun and air to effect the growth and ripening of the fruit.

In performing the ſummer dreſſings, if you begin betimes, before the young wood becomes long and woody, all redundances may be rubbed off cloſe by hand; but if the ſhoots are firſt ſuffered to be of conſiderable length, and hardened, the knife muſt be uſed, always rubbing or cutting cloſe.

Winter pruning. This may be performed any time from the fall of the leaf in November till March; in this pruning, a general regulation is to be obſerved both to old and new branches when neceſſary, therefore examine firſt the ſtate of all the main horizontals, if any are decayed, or much cankered, take them out, either to their origin, or to ſome healthful young branch ariſing from them below the defect; likewiſe any old naked branch, not furniſhed with bearing ſpurs, nor ſupport-branches, that are, ſhould alſo be cut out, where there are large cluſtering ragged ſpurs, formed by the remaining ſtumps of ſhortened ſhoots as before obſerved; cut them alſo off cloſe, being careful to preſerve all the natural fruit-ſpurs already deſcribed. Examine alſo ſuch young ſhoots that were trained up in the ſummer dreſſing, ſuch of them that

are well placed, and towards the lower parts of the main branches, and are likely to be wanted to fill any preſent or future vacancy, are to be left and trained up regularly at full length; for it is neceſſary always to have ſome young branches in training between the principal ones, in different parts, where you ſhall judge neceſſary, without crowding, to be coming forward gradually to a bearing ſtate, to ſupply the place of ſuch as are apparently in a decaying ſtate, or but bad bearers; all other young ſhoots left in ſummer, that are not wanted for the above purpoſe, ſhould now be cut out cloſe, obſerving, as in the ſummer pruning, that all ſhoots ariſing ſingly, immediately from the ends of the horizontals, muſt now alſo be left entire, that is, leaving only one to each branch as a leader, and to extend the reſpective branches in length, to fill the extent of Eſpalier allotted; ſo that every branch and ſhoot ſo reſerved for training in, muſt, except in caſe of a vacancy, alſo ſtill be continued along at full length, they will then naturally form fruit-ſpurs at almoſt every eye or bud all along their ſides.

For the branches of apples, pears, plums, cherries, &c. always produce their fruit upon ſpurs, which generally begin to form when the branches are two or three year old, provided the branches are left entire, but if ſhortened, they never form properly.

Having winter-pruned the trees, you muſt then proceed to freſh tye all the horizontals, old and new, in a neat manner to the treillage, ſtill preſerving nearly an equal number on each ſide of every tree, and all at regular diſtances of ſix or eight inches, and their poſition ſo much horizontal, as their extremities may not be above ſix or eight inches higher than the bottom parts, training every branch as ſtraight as an arrow, clean from the bottom to the extremity, tying them neatly to each upright of the treillage.

The beſt material for tying the branches of Eſpaliers, is oſier, chuſing the ſmall twigs of about eighteen inches, or two feet long, which, if you have none of your own growing, may purchaſe them cheap enough at the baſket-makers, the yellow oſier is the beſt if it can be obtained. See SALIX.

The mode of tying is, put the twig around behind the treillage, keeping the biggeſt end faſt, bring the other end round the branch, to meet it, twiſting it about the big end once or twice, cloſe to the branch, and turn the point in betwixt that and the tying, draw it tight, then cut both ends even, to about an inch; in this manner every branch muſt be tyed to all the uprights of the treillage its length reaches.

EVER-GREENS, *(Sempervirens.)*

All ſorts of trees, ſhrubs, and herbaceous plants that retain their green leaves the year round, may be denominated Ever-greens, though it is moſt commonly underſtood of trees and ſhrubs, of which there are great numbers in our gardens and plantations, employed both for ornament, variety, and as foreſt trees for timber, many of which are adapted to grow in any part of the habitable world, and in general their leaves are harder and leſs ſucculent than thoſe of deciduous trees; they are not in the leaſt influenced by the clemency or inclemency of ſeaſons, but preſerve them in conſtant verdure through the year; the old leaves remaining a long time after the formation of the new ones, and do not drop them at any determinate time.

Many herbaceous perennials enjoy the ſame privilege with the Ever-green trees in retaining their leaves, and reſiſt the ſeverities of winter; ſome even can diſpenſe with earth for ſome conſiderable time, ſuch are the houſe-leeks, navel-worts, aloes, &c. being replete with juices, which the leaves imbibe from the humidity of the atmoſphere, ſufficient for effecting the purpoſes of vegetation.

Notwithſtanding all the principal Ever-green trees and ſhrubs are fully treated of, as they occur in the courſe of this work, we think it eligible to collect into one point of view, a liſt of all the principal ſorts commonly cultivated in the nurſeries for ſale, and which are proper for uſe and ornament in gardening.

In this place however we ſhall only exhibit the hardy ſorts; for the others, ſee GREEN-HOUSE, HOT-HOUSE, &c.

Each ſort is arranged according to its *generical* title, viz.

ARBUTUS, or ſtrawberry-tree—common Arbutus, with oblong fruit—with round fruit—with red flowers—double bloſſom common Arbutus—oriental Arbutus, or andrachne—curled-leaved andrachne.

ARTEMISIA, Mugwort—tree wormwood.

ATRIPLEX, ſee purſlane-tree,—broad-leaved—narrow-leaved.

BUPLEURUM, ſhrubby Æthiopian hart-wort.

BUXUS, the box-tree—broad-leaved tree box—narrow-leaved—gold-ſtriped—ſilver-ſtriped—gold-edged—curled-leaved ſtriped—dwarf ſhrubby box.

CELASTRUS, ſtaff-tree—Virginia upright celaſtrus—climbing celaſtrus.

CISTUS, rock-roſe—poplar-leafed—willow-leafed—bay-leafed—waved-leafed—round-leafed—ſea purſlane-leafed—oblong white-leafed—hoary-leafed—Montpelier white gum ciſtus—ladaniferous ciſtus—Cretan ciſtus.

CLEMATIS, virgins bower—Ever-green Spaniſh climber.

CNEORUM, widow-wail, but one ſort.

CUPRESSUS, cypreſs-tree—common cypreſs, with upright branches—with ſpreading branches—with ſmall fruit—blue-berried cypreſs.

CYTISUS, tree trefoil—Ever-green Neapolitan cytiſus.

DAPHNE, ſpurge-laurel—common ſpurge-laurel—variegated ſpurge-laurel.

EPHEDRA ſhrubby horſe tail, but one ſort.

EUONYMUS, ſpindle tree—Ever green ſpindle-tree.

HEDERA, ivy-tree—common ivy-tree—yellow-berried—gold-ſtriped—and ſilver-ſtriped common ivy.

ILEX, the holly-tree—common; of which there are the following varieties—Common green prickly-leafed—ſmooth green-leafed—green-leafed yellow-berried—box-leafed—gold-ſtriped common prickly-leafed—ſilver-ſtriped common prickly-leafed—gold-ſtriped ſmooth-leafed—ſilver-ſtriped ſmooth-leafed—narrow-leafed ſtriped—cream-coloured ſtriped ſawed-leafed—hedge-hog-leafed, having the whole ſurface covered with ſhort ſpines, of which there are, green hedge-hog—ſilver-ſtriped hedge-hog—gold-ſtriped hedge-hog—and ſilver-edged hedge-hog—blotched-leafed yellow-berried—Hertfordſhire white leafed—copper-coloured; with ſeveral other leſs material varieties—Dahoon broad-leafed holly.

JUNIPERUS, Juniper tree—common juniper—taller Swediſh common juniper—Spaniſh large-berried juniper—red Virginia and Carolina cedar—Bermudas cedar—Phœnician cedar—Lycian cedar—great cypreſs-leaved Jamaica cedar. Savins, ſpreading ſavin—upright ſavin—ſtriped ſavin: all the above are ſpecies and varieties of *Juniperus*.

KALMIA, broad-leafed—narrow-leafed.

LAURUS, bay-tree—common bay—broad-leafed—narrow-leafed.

LIGUSTRUM, privet—Ever-green privet.

PHLOMUS, Jeruſalem ſage-tree—broad-leafed yellow phlomus—narrow-leafed yellow phlomus—purple phlomus, or Portugal ſage-tree.

PINUS, pine-tree, fir-tree, and cedar of Lebanon:—pine kinds are, wild pine, called Scotch fir—pineaſter, or long-leafed wild pine—Weymouth pine—great-coned ſtone pine—long three-leafed ſwamp pine—cembro pine—frankincenſe large-coned pine—dwarf pine:—fir kinds are, ſilver yew-leafed fir—Norway ſpruce fir—Newfoundland white ſpruce fir—Newfoundland black ſpruce fir—Newfoundland red ſpruce fir—hemlock fir—long-coned Corniſh fir—balm of Gilead, or ſweet-ſcented fir—oriental fir—cedar of Lebanon.

LONICERA, honey-ſuckle—Ever-green honey ſuckle.

MAGNOLIA, Ever-green magnolia, called laurel-leafed tulip-tree.

MEDICAGO, moon trefoil—ſhrubby, hoary, Ever-green medicago.

MESPILUS, the medlar—Evergreen meſpilus, pyracantha, or Ever-green thorn.

PHILLYRIA, mock privet—the common, oval-leaved, privet-leafed, and olive-leafed—the broad-leafed, with ſmooth leaves, prickly-leafed, and ſawed-leafed—the narrow-leafed, with roſemary-leaves, lavender-leafed, and ſtriped-leafed.

PRINOS, winter berry—Ever-green winter berry, Yappon, or South-ſea thea, formerly *Caſſine*.

PRUNUS, plum-tree—Ever-green prunus, or laurel-tree; of which are, common green laurel—gold-ſtriped laurel—and ſilver-ſtriped laurel—Portugal laurel.

PYRUS, pear-tree—Ever-green ſweet-ſcented Virginia crab-tree.

QUERCUS, oak-tree, and cork-tree—common Ever-green oak, with broad leaves, narrow leaves, and holly-leafed—cork-tree with broad leaves, and narrow leafed—dwarf kermes oak—live oak.

RHAMNUS, including alaternus and buck-thorn—common alaternus—broad-leafed alaternus—jagged-leaved alaternus—blotched-leafed alaternus—gold-ſtriped-leafed alaternus—ſilver-ſtriped alaternus—Ever-green buck-thorn with narrow leaves—olive-leafed.

RHODODENDRON, dwarf roſe bay.—The common dwarf-roſe bay—large American.

ROSA, roſe-tree—Ever-green roſe.

RUSCUS, butchers broom—common myrtle-leafed, prickly butchers broom—broad-leafed hypogloſſum, or tongue-upon-tongue laurel, Alexandrian laurel.

SALSOLA, ſtone-crop-tree, formerly *Chenopodium*.

TAXUS

TAXUS yew-tree—common yew-tree—ſhort-leafed—variegated-leafed.

THUYA, *Arbor Vitæ*, or tree of life—common arbor vitæ—Chineſe arbor vitæ—American ſweet-ſcented—variegated.

VIBURNUM, *Lauruſtinus*—common lauruſtinus—broad-leafed—hairy-leafed—ſhining-leafed—white-ſtriped-leafed—yellow-ſtriped-leafed.

ULEX, furze, gorſe, or whins—common wild furze—white-flowered—long narrow-ſpined—ſhort-ſpined—large French furze—dwarf-furze.

All the above liſt of Ever-green trees and ſhrubs, are ſo hardy, that they proſper in almoſt any common ſoil and ſituation: ſeveral of the large ſorts may be employed both as foreſt trees, and for ornament, and the ſorts in general are choice furniture for all kinds of ſhrubbery works, which, for the general part ſhould be ſtationed in clumps or plantations by themſelves, and not too generally intermixed with trees of the deciduous tribe, except here and there one towards the fronts of clumps, and borders of principal plantations, where they may be conſpicuous; but they have a fine effect when they are ſtationed in clumps alternately with thoſe of the deciduous kinds, either on the boundaries of grand lawns, or any other principal part of pleaſure-grounds, parks, or fields, or ſides of hills, &c.

Theſe plants, both of the tree and ſhrub kind, in all plantations, whether in ſmall or large clumps, or in any running ſhrubbery works, ſhould all be ſuffered to retain their natural growth, only juſt to cut out or ſhorten any very rambling or irregular ſhoot or branch, and broken and decayed wood.

Formerly hedges of Ever greens were in great eſtimation for purpoſes of ornament, but the prevailiug taſte of rural deſigns in gardening has almoſt aboliſhed every thing of that kind from the Engliſh gardens; Ever-greens were alſo in great repute for effecting various pieces of rural architecture, both in hedges and other works, forming cabinets, pavillions, porticoes, pilaſters, niches, arcades, cornices, pediments, amphitheatres, and various other figures, which in ancient gardening were often ſo arranged, and curiouſly trained, as to effect an air of grandeur and art, but becoming at laſt too general, and ſo predominant, that ſcarce any thing elſe was to be ſeen, the taſte created diſguſt, and is now almoſt univerſally ſupplanted by the introduction of deſigns entirely rural; though, for the ſake of variety, ſomething of theſe regular works might ſtill be admitted with propriety in ſome particular parts of large pleaſure-grounds, which, if judiciouſly diſpoſed, not to obſtruct views, &c. they may be uſeful both to effect variety and ornament, in contraſt with rural deſigns, as well as afford an opportunity for the gardener to diſplay his ingenuity in ſuch kind of works.

The ſorts of Ever-greens commonly uſed for the above kind of work in hedges, &c. are yew, holly, phillyrea, alaternus, lauruſtinus, and Ever-green oak; ſometimes laurel, bay, tree-box, pyracantha, ſea purſlane ſhrub, juniper, Virginia cedar, and roſemary; but yew and holly are ſuperior for any general work, they growing very cloſe and firm, and always retain their poſition, though, ſeveral of the other ſorts appear very beautiful in any kind of hedge-work, particularly the phillyrea, alaternus, lauruſtinus, Ever-green oak, and laurel; but for ſingle detached figures, yew is the beſt calculated, ſometimes holly, and the tree-box is alſo uſed for that purpoſe.

All hedge-work and figures of any of the above kind, ſhould always be clipped once every ſummer at leaſt; but, to have them perfectly neat, ſhould have that operation performed twice, the firſt in June, and the ſecond in Auguſt. See HEDGES.

EUONYMUS, Spindle tree.

This genus furniſhes two hardy deciduous and ever-green flowering ſhrubs for the ſhrubbery, of ten or twelve feet ſtature, ornamented with ſimple leaves, and bunches of ſmall pentapetalous white flowers.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX is monophyllous, and five-parted. COROLLA four or five oval, plane ſpreading petals. STAMNIA, five ſhort filaments, and twin antheræ. PISTILLUM, an acuminated germen, ſhort ſtyle, and obtuſe ſtigma. PERICARPIUM, a ſucculent pentagonous, quinquangular, quinquelocular, coloured capſule, having one oval ſeed in each cell.

There are but two real ſpecies, viz.

1 EUNONYMUS *Europæus.*

*European deciduous Spindle tree.*] Euonymus with an upright woody ſtem, dividing into many branches, riſing ten or fifteen feet high, garniſhed with oblong oppoſite leaves; and from the ſides of the branches, ſmall bunches of greeniſh quadrifid flowers, ſucceeded by pentagonous capſules, diſcloſing their ſeeds in a beautiful manner in autumn.

*Varieties.*] Narrow leaves and deep red berries—with pale red berries—with white berries—with broad leaves—with variegated leaves.

[2]EUONYMUS *Americanus.*

*American Ever-green Spindle-tree.*] Euonymus with a ſhrubby ſtem, dividing into many oppoſite branches, riſing ſix or eight feet high; garniſhed with ſpear-ſhaped ever-green leaves, growing oppoſite, and from the ſides and ends of the branches; ſmall cluſters of quinquifid whitiſh flowers, ſucceeded by roundiſh, rough, protuberant capſules, ſeldom ripening ſeeds in England.

*Variety.*] With variegated leaves.

Both theſe ſpecies and varieties are hardy, and ſucceed in any common ſoil and expoſure.

The firſt grows wild in hedges and woods in many parts of Britain, and other parts of Europe; but has been long an inhabitant of gardens, eſteemed for the ornamental appearance of its ſeeds, particularly the red ſorts, in October and November, when the capſules ſpread open, and expoſe the berry-like ſeeds, form a fine variety, the branches of which being uſed for making ſkewers and ſpindles, derives the name ſpindle-tree.

The ſecond is of American growth, and is a very pretty ever-green, for any ornamental plantation.

*Propagation of both Species.*

The *Euonymus Europæus*, and varieties, may be propagated plentifully by ſeeds, layers, and cuttings.

By Seed—Sow it in a bed or border of common earth, in October or November, covering with earth near an inch deep, and the plants will riſe in ſpring following, though ſometimes many of them not till the ſecond ſpring; keep them clear of weeds till autumn, then tranſplant them in nurſery-rows, and in two or three years they will be of due ſize for the ſhrubbery.

By Layers—Lay down the young ſhoots in autumn, or winter, or early in ſpring, giving them a ſlit at a joint, and they will be rooted by autumn following.

By Cuttings—In autumn take off cuttings of the young ſhoots eight or ten inches long, plant them in a ſhady border, and they will be rooted in one year.

Either of the two latter methods, or budding, or grafting, are the only certain way of continuing the varieties, which vary from one to the other by ſeed.

The ſecond ſort, and variety, is propagated chiefly by layers of the young branches in autumn, giving each a ſlit, and they will be rooted and fit to tranſplant by that time twelvemonth.

EUPATORIUM, Hemp Agrimony.

Of this genus, are ſeveral herbaceous flowery perennials for the pleaſure-ground, producing annual ſtalks from two to four or five feet high, adorned chiefly with ſimple leaves, and terminated by cluſters of compound flowers.

Claſs and order, *Syngeneſia Polygamia Æqualis.*

*Characters.*] CALIX, a ſcaly, imbricated general cup. COROLLA, ſeveral funnel-ſhaped hermaphrodite florets, five-parted, and ſpreading at the brim. STAMINA, five filaments, and cylindric antheræ. PISTILLUM, a ſmall germen, long bifid ſtyle, and narrow ſtigma. PERICARPIUM, none. SEMEN, an oblong downy ſeed under each floret.

[1]EUPATORIUM *Cannabinum.*

*Common European Hemp Agrimony*] Eupatorium with upright reddiſh ſtalks, three feet high, fingered-leaves, having oblong indented lobes, and the ſtalks terminated by large cluſter of pale red flowers.

[2]EUPATORIUM *Maculatum.*

*Spotted-ſtalked American Eupatorium.*] Eupatorium with upright dark purple-ſpotted ſtalks two feet high, garniſhed with ſpear-ſhaped, equally ſerrated, rough leaves by fives, and the top terminated by a corymbus cluſter of purpliſh flowers.

[3]EUPATORIUM *Aromaticum.*

*Aromatic White Penſylvanian Eupatorium.*] Eupatorium with upright ſtalks three feet high, oval obtuſe, trinervous, ſerrated leaves, and the ſtalks terminated by corymbus cluſters of white flowers.

[4]EUPATORIUM *Purpureum.*

*Purple-ſtalked Canada Eupatorium.*] Eupatorium with upright ſtalks four feet high, garniſhed with long, ſpear-ſhaped, unequally ſerrated, rough leaves by fours, and terminated at top by cluſters of purple flowers.

[5]EUPATORIUM *Altiſſimum.*

*Tall, long-leaved Penſylvanian Eupatorium.*] Eupatorium with upright ligneous ſtalks, four or five feet high, garniſhed with very long, ſpear-ſhaped, nervous, ſlightly ſawed leaves, and terminated at top by corymbus cluſters of white flowers.

[6]EUPATORIUM *perfoliatum.*

*Perfoliate Virginia Eupatorium.*] Eupatorium with upright ſtalks three feet high, garniſhed

niſhed with long rough leaves, connected at their baſe and perforated by the ſtalk, which is terminated by cluſters of white flowers.

All theſe plants have perennial roots, and annual ſtalks riſing in ſpring, flower in July and Auguſt, and produce ripe ſeed in autumn; the firſt grows wild in England, by water-ſides, but all the others are of American growth, and they are very hardy.

They are proper furniture for the compartments of large pleaſure-grounds, to encreaſe the variety of flowery perennials, and will ſucceed any where, but delight moſt in moiſt ſhady places.

Their propagation is by ſeed, and by parting the roots in autumn or ſpring.

Sow the ſeed on a bed or border of common earth, either on the ſurface and raked in, or in ſhallow drills half an inch deep; and when the plants are two or three inches high, prick ſome of them out five or ſix inches apart, to ſtand till autumn, then tranſplant them where they are to remain.

By parting the roots.—The roots furniſh off-ſets plentifully, which may be ſeparated in autumn, and planted out ſeparately, either into nurſery-beds for a ſeaſon, or at once in the places where they are to ſtand.

Their principal culture is, the keeping clean from weeds, digging about them annually, and cutting down the decayed ſtalks in autumn.

EUPHORBIA, burning thorny plant, including alſo *Tithymalus* (*Euphorbia.*)

This genus compriſes many ſhrubby and herbaceous ſucculents, moſtly tender exotics, for the ſtove and green-houſe; conſiſting chiefly of thick, fleſhy, ſucculent ſtalks and branches, frequently armed with thorns, obtaining in ſtature ſome ten or twelve feet, others ſcarce ſo many inches, of various ſingular growths, often entirely devoid of leaves, and with quadripetalous cloſe-fitting flowers.

Claſs and order, *Dodecandria Trigynia.*

*Characters.*] CALIX is monophyllous ventricoſe, four or five-parted, and perſiſtent. COROLLA, four or five thick truncated petals. STAMINA, twelve or more filaments, and globular didymous antheræ. PISTILLUM, a roundiſh trigonous germen, three ſtyles, and obtuſe ſtigmas. PERICARPIUM, a roundiſh trilocular capſule, and three roundiſh ſeeds.

The ſpecies chiefly cultivated in the Engliſh gardens, are.

[1]EUPHORBIA *Antiquorum.*

*Euphorbia of the Ancients.*] Euphorbia, with an upright, triangular, ſucculent, perennial ſtalk, riſing ſix or eight feet high, armed with crooked ſpines, and emitting on every ſide, many triangular irregular ſpreading branches, having at their extremities roundiſh leaves, that ſoon drop off, and ſometimes a few whitiſh flowers.

*Variety.*] With upright, three and four-angled, jointed, very thorny ſtalks, and erect branches.—(*Trigonum.*)

[2]EUPHORBIA *Neriifolia.*

*Oleander-leaſed Euphorbia.*] Euphorbia, with an upright, ſtrong, ſucculent, angular ſtalk, ſet with oblique tubercles, branches out near the top, and grows five or ſix feet high; the branches armed with crooked ſpines, and garniſhed with roundiſh deciduous leaves, ſucceeded by greeniſh white cloſe ſitting flowers.

[3]EUPHORBIA *Canarienſis.*

*Canary leafleſs Euphorbia.*] Euphorbia with an upright, four or five-angled, ſucculent, perennial, green ſtalk, branching out ſtrongly all around, armed with ſpines by pairs, and all the branches turning upward towards their extremities, no leaves, but ſmall whitiſh flowers at the ends of the branches.

[4]EUPHORBIA *Officinarum.*

*Officinal Euphorbia.*] Euphorbia, with ſeveral many angled, ſucculent, perennial ſtalks from the bottom, emitting irregular horizontal branches, gradually turning upward, armed with ſpines, and from the upper parts, greeniſh white flowers.

[5]EUPHORBIA *Tithymaloides.*

*Tithymaloides, or Myrtle-leaſed Baſtard Spurge.*] Euphorbia with ſhrubby, ſlender, ſucculent ſtalks and branches; riſing eight or ten feet high, oval acute-pointed leaves, ranged alternately on two ſides of the branches, and from the end of the branches ſeveral ſcarlet flowers.

*Variety.*] Laurel-leafed baſtard ſpurge—and with variegated leaves.

[6]EUPHORBIA *Caput Meduſæ.*

*Caput Meduſæ, or Meduſa's Head Euphorbia.*] Euphorbia with thick, roundiſh, ſucculent, ſcaly ſtalks, roundiſh ſcaly branches, twiſting over one another, appearing like many-headed ſerpents, narrow, thick, ſucculent leaves, and from the upper parts of the branches, white, cloſe-ſitting flowers.

*Varieties.*] Little Meduſa's head, having a ſhort ſtalk, ſix or eight inches high, and ſlender trailing branches, twiſting over one another—dwarf-trailing Meduſa's head, with ſwelling ſcales—low ſpreading Meduſa's head, without

without ſcales—deciduous, low ſpreading Meduſa's head, with leaves falling ſoon off—double branching, low, ſpreading Meduſa's heads.

All theſe ſpecies of Euphorbia, are very ſucculent in ſtalks and branches, abounding with a milky juice, ſo extremely acrid, as to burn linen, or bliſter the hand or any part of the ſkin, where applied; and the branches being ſo ſucculent, cuttings thereof, if preſerved dry, may be kept out of the ground ſeveral months if neceſſary, and then planted, will readily emit roots and grow.

They are all natives of the hot parts of Africa, Aſia, and America, and retained here in our ſtoves, as plants of curioſity, for the great ſingularity of their ſtrange growth.

In their culture here, they muſt be kept always in pots of very light, ſandy, or rubbiſhy poor ſoil, and placed upon the ſhelves in the hot-houſe.

They are all eaſily propagated by cuttings of their branches any time in ſummer; take off the cuttings with a knife, from three to five or ſix inches long; lay them on a dry ſhelf till the wound is dried up and ſkinned over, as for other ſucculent cuttings; when this is effected, plant them ſingly in ſmall pots of dry ſandy ſoil, and plunge them in the bark-bed, give a little water once or twice a week, and they will ſoon be well rooted, and may then be placed upon the ſhelves in any part of the ſtove.

They muſt be allowed larger pots occaſionally, once every year or two, but never put them in any too large; waterings will be neceſſary now and then, which in winter once a week is ſufficient, and not oftener than twice in ſpring and autumn, and about two or three times a week in the heat of ſummer.

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# F.

FAGUS, the Beech-tree, and the *Caſtanea*, or cheſtnut tree.

This genus retains three hardy deciduous trees, two of them of large and beautiful growth, valuable to cultivate for timber, and for ornamental plantations; the other is a dwarf ſhrub-like tree for the ſhrubbery, all of them adorned with beautiful ſimple foliage, and monoecious amentaceous flowers.

Claſs and order, *Monoecia Polyandria.*

*Characters.*] Male and female flowers on the ſame tree, collected into globular and cylindric amentums, having monophyllous cups, five-parted in the males, and four in the females. COROLLA none. STAMINA, many filaments in each cup, and oblong antheræ. PISTILLUM, a germen, three ſtyles and ſimple ſtigmas. PERICARPIUM, a large roundiſh ſpinous capſule, formed of the calix, containing two nuts.

The ſpecies are;

[1]FAGUS *Sylvaticus.*

*The Beech tree.*] Fagus, with an upright, ſtraight, ſmooth trunk, riſing ſixty or ſeventy feet high, and of proportionable bulk, branching upward, into a fine regular head, garniſhed with oval, ſerrated leaves; flowers in globular katkins, ſucceeded by angular fruit called maſt.

*Varieties.*] With yellow ſtriped leaves—white ſtriped leaves—with purpliſh leaves.

[2]FAGUS *Caſtanea.*

*Caſtanea or Cheſtnut-tree.*] Fagus, with an upright large trunk, growing forty or fifty feet high, branching regularly around, into a fine ſpreading head, garniſhed with large, ſpear-ſhaped, acutely ſerrated leaves, naked on the under ſide, flowers in long amentums, ſucceeded by round prickly fruit, containing two or more nuts.

*Variety.*] Gold ſtriped-leafed-cheſtnut-tree.

FAGUS *Pumila.*

*Dwarf Cheſtnut-tree, or Chinquepin.*] Fagus with a ſhrub-like ſtem, branching eight or ten feet high, oval, ſpear-ſhaped, acutely ſerrated leaves, hoary on the under ſide.

The flowers of all theſe trees are very inconſiderable in appearance, thoſe of the beech-tree are collected into roundiſh heads appearing in May and June, ſucceeded by the maſt, an angular

angular fruit, in autumn; and the flowers of the two ſpecies of cheſtnuts are gathered into long katkins, appearing in May, ſucceeded by the nuts in autumn, in large, round, prickly covers, each containing one, two, or more nuts.

The firſt two ſpecies may be ranked with the firſt claſs of timber trees, both for their ornamental appearance when growing, and their various uſes when felled as timber; no trees are more ſuitable for parks, extenſive lawns, large wilderneſs works and clumps, or on the ſides of woods, fields, avenues, and by the ſides of large ridings; that beſides their ornamental appearance when growing, and expectation of their valuable timber, they afford a plentiful annual crop of fruit for ſwine, deer, and other animals, and the fruit of the cheſtnut tree is often eaten at table, and is greatly eſteemed by many when roaſted; the fruit do not however, always arrive at ſuch perfection here as in Spain, from whence great quantities are annually ſent hither in winter.

The beech was formerly much employed to form hedges, to ſurround the quarters of the pleaſure-grounds, according to the ancient mode of dividing the ground into regular ſquares, angles, &c. it forms a very handſome hedge, when neatly ſheared twice every ſummer, i. e. about Midſummer, and again in Auguſt.

The timber of thoſe trees are va'uable for many purpoſes; that of the beech is eſteemed by the turners, as alſo by joiners, for making bedſteads, chairs, ſtools, dreſſer-boards, coffins, &c. and as to the cheſnut, the uſes of its timber are almoſt univerſal, not only for building, but for many other ſtrong purpoſes, as well as for making fine tables, chairs, bedſteads, &c. and all ſorts of veſſels to hold liquor; as under-wood, it is alſo ſuperior for poles for hops, and various other uſes.

As to the dwarf cheſtnut, it is only employed for variety in ſhrubberies, and other ornamental plantations.

All the ſorts will thrive on almoſt all ſoils and ſituations, in ſandy, gravelly, loamy, or clayey land, either on plains, declivities, or ſides or tops of hills.

*Propagation and Culture.*

Firſt of the beech tree. This is eaſily raiſed from the maſt or ſeed, which ripens abundantly in September, and which may either be ſown then, or in a month or two after, or towards ſpring; for which prepare beds four feet wide, and raking the earth evenly from off the ſurface, about an inch deep, then ſow the maſt, and beat it gently down with the back of the ſpade, and cover it over with the earth the above depth; in ſpring many plants will come up, others not till a year after, and when they are two years old, plant them out in nurſery rows, two feet and half aſunder, to remain till they are four or five feet high, or more, and then tranſplant them, where they are to remain.

Second, the cheſtnut tree. This tree is alſo propagated by ſeeds, i. e. the nuts, which ſometimes ripen perfectly in England, but in default of this, there are vaſt quantities imported annually from Spain and Portugal, which are rather preferable, either of which are to be preſerved in ſand till February, then ſow them in drills; let the drills be made a foot aſunder, and near three inches deep, in which place the nuts two or three inches diſtance, and earth them over, they will ſoon germinate, and come up freely the ſame ſpring; all the culture they require, is to be occaſionally hand-weeded, and when two years old, tranſplant them in February in the nurſery rows, at which time, previous to planting, ſhorten their roots and trim off all ſide-ſhoots, then plant them in lines two feet and half diſtance, and half that diſtance in the rows; and after having four or five years growth, they will be of due ſize to plant out for good, either for ornamental plantation, or as foreſt trees.

If a wood or plantation of theſe trees are deſigned for profit, they may be planted any where not too wet, placing them ſix feet diſtance, which is ſufficient room to grow for poles, when they may be cut down within a foot of the ground, leaving a ſufficiency of the moſt promiſing at twenty feet diſtance, to grow up for timber.

The dwarf-cheſtnut, or chinquepin, is alſo raiſed from the nuts, which are procured from America by the ſeedſmen, and are to be planted in drills, and in every reſpect as the common ſort.

The variegated-leafed kinds are continued by budding, grafting, or inarching in ſtocks of the common ſorts.

FEMINEUS *flos*, a Female Flower.

A Female Flower, according to the ſexual ſyſtem, is that which is furniſhed only with the *piſtillum*, or female organs of generation, i. e. the germen, ſtyle, and ſtigma, but wants the ſtamina, or male organs altogether.

They

They, the Female Flowers, are produced apart from the males either on the ſame plant, as in cucumber, melon, gourd, mulberry, and other plants of the claſs *monoecia*; or on diſtinct plants, as in all the genera in the claſs *dioecia*. See CLASSIS.

FEMINA *planta*, a Female Plant, a plant which produces female flowers only, as ſpinach, hemp, poplar, juniper, *meniſpermum*, *myrica*, and other genera of the claſs *dioecia*.

FERULA, Fennel-giant.

The plants are large, herbaceous, flowery perennials, producing annual ſtalks eight or ten feet high, terminated by yellow umbels of flowers.

Claſs and order, *Pentandria Digynia*.

*Characters*.] CALIX, umbellate flowers, having a caduous general involucrum, and a many-leaſed partial one, and ſcarce any calix to the florets. COROLLA, a globular general umbel, compoſe of many quinquepetalous florets. STAMINA, five filaments and ſingle antheræ. PISTILLUM, a turbinated germen, two ſtyles, and obtuſe ſtigma. PERICARPIUM, an elliptical, plane, two-parted fruit, and two ſeeds.

The principal ſpecies are:

[1]FERULA *Communis*.

*Common Fennel-giant*.] Ferula, with long thick, juicy roots, crowned by very long many-parted leaves, compoſed of numerous very long, narrow, undivided ſegments, ſpreading widely on the ground, upright, ſtrong, jointed, hollow ſtalks, ten or twelve feet high, garniſhed with divided leaves, and terminated by roundiſh umbels of yellow flowers.

[2]FERULA *Ferulago*.

*Ferulago, or Pinnatifid Galbanum Fennel-giant*.] Ferula with long, thick, juicy roots, crowned by long pinnatifid leaves, of numerous plane three-parted ſegments, ſpreading widely on the ground; upright, ſtrong, jointed, hollow ſtalks, ſeven or eight feet high, terminated by roundiſh umbels of yellow flowers.

Of the juice of the roots of them is prepared the drug *galbanum*.

[3]FERULA *Tangitana*.

*Tangier ſhining Ferula*.] Ferula, with very thick juicy roots, crowned by many-parted, ſhining leaves, compoſed of numerous jagged unequally three-parted ſegments, ſpreading widely on the ground; upright, ſtrong, hollow, ſtalks, eight or ten feet high, terminated by large umbels of yellow flowers.

[4]FERULA *Glauca*.

*Glaucous Fennel-giant*.] Ferula with a thick juicy root, crowned by large many-parted glaucous, or grey leaves, of many narrow plane ſegments, upright, ſtrong, jointed, hollow ſtalks, ſix or eight feet high, terminated by yellow umbels.

All theſe ſpecies of *Ferula* have thick, fleſhy, perennial roots, ſpreading and penetrating deep into the ground, leaves ſpreading widely around; and ſtalks an inch and half thick, are perennial in root, but annual in leaf and ſtalk, which riſe in ſpring, flower in June and July, ripen ſeeds in September, and decay ſoon after.

They are proper furniture for the large compartments of extenſive pleaſure-grounds, they will grow any where, but grow talleſt and ſtrongeſt in deep ſoils.

Their propagation is effected by ſeed, in autumn or ſpring, in drills twelve inches aſunder, ſowing it thinly, and cover it near an inch deep, and when the plants are a year old, tranſplant the largeſt into the places where they are to remain.

FICUS, the Fig-tree.

The common fig-tree of our gardens conſiſts only of one ſpecies, very comprehenſive in the varieties of its fruit, is of the deciduous tribe, moderately hardy, producing fruit in great perfection againſt walls, alſo tolerably in eſpaliers and ſtandards; but beſides this ſort, there are ſeveral other tender exotic ſpecies, ſometimes retained in our hot-houſes, for variety; we ſhall however firſt exhibit the culture of the common kind.

Claſs and order, *Polygamia Trioecia*.

*Characters*.] CALIX androgynous, male, and female flowers upon three diſtinct plants, included in great numbers within the fruit, which ſerve as a general calix, or receptacle, each floret having, in the males a three, and the females a five-parted cup. COROLLA, no petals to the florets. STAMINA, three briſtly filaments in the males, and didymous antheræ. PISTILLUM, in the females, an oval germen, reflexed ſtyle, and two reflexed ſtigmas. PERICARPIUM, none, but the numerous ſeeds are lodged in the general calix, and which become the fruit.

The fruit of the fig-tree, in the vulgar acceptation of the word, is the common calix, to the flowers, which are numerous very ſmall florets, that line its internal ſurface, ſo that

that they are not viſible without opening the fruit or common receptacle.

Theſe flowers are in ſome trees female only, in others male, and ſome male and female within the ſame receptacle.

The ſpecies of the common fig-tree is;

FICUS *Carica.*

*Common cultivated Fig-tree.*] Ficus, with an upright ſtem, branching fifteen or twenty feet high, garniſhed with large palmated or hand-ſhaped leaves.

The leaves are generally more or leſs divided into five principal parts.

This tree always produces its fruit upon the young ſhoots of the former year, riſing immediately from the eyes of the ſhoots, appearing firſt like ſmall buds, which encreaſe gradually in ſize till July, Auguſt, and September, when they arrive at full growth, are large, ſomewhat pear-ſhaped, and as it approaches to ripeneſs, the ſkin changes gradually from a greeniſh to blueiſh, purpliſh, blackiſh, whitiſh, or yellow colours in different varieties, full of a purpliſh, reddiſh, whitiſh, or yellow pulp, becomes very ſoft, juicy, and extremely rich and luſcious.

The principal *Varieties* of this fruit are:

*Common Fig.*—A large oblongiſh, dark, purple-blue fruit; the tree a great bearer, and ripens in great perfection in Auguſt, either on ſtandards or walls.

*Brown or Cheſtnut Fig.*—A large globular, ſhortiſh, cheſtnut-coloured fruit, having a purpliſh delicious pulp, ripen in July and in Auguſt.

*Black Iſchia Fig.*—A middle-ſized, ſhortiſh, flat-crowned, blackiſh fruit, having bright pulp; ripe middle of Auguſt.

*Green Iſchia Fig.*—A large oblong, globular-headed greeniſh fruit, ſlightly ſtained through by the pulp to a reddiſh brown colour; ripe end of Auguſt.

*Brown Iſchia Fig.*—A ſmall pyramidal, browniſh, yellow fruit, having a purpliſh very rich pulp; ripe in Auguſt and September.

*Malta Fig.*—A ſmall flat-top'd brown fruit; ripe the middle of Auguſt and September.

*Round Brown Naples Fig.*—A globular, middle ſize, light brown fruit, and browniſh pulp; ripe end of Auguſt.

*Long Brown Naples Fig.*—A long dark-brown fruit, having a reddiſh pulp; ripe in September.

*Great Blue Fig.*—A largiſh blue fruit, having a fine red pulp.

*Black Genoa Fig.*—A large pear-ſhaped black-coloured fruit, and bright red pulp; ripe in Auguſt.

*Divided-leafed Fig-tree,*—having the leaves deeply divided into many narrow ſegments, valuable principally for the ſhrubbery for the variety of its leaves.

There are many other varieties, but it is unneceſſary to recount them, ſome of them being nearly alike, and many of them will not ripen perfectly in our gardens.

Moſt of the above varieties of figs will bear plentifully againſt walls of a ſouth, eaſt, or weſt aſpects, and will alſo bear very well in eſpaliers; they will likewiſe in fine dry ſummers, produce tolerable good crops on ſtandards, in a full expoſure, either as full ſtandards, half ſtandards, or dwarfs, and ſometimes produce greater crops of fruit than thoſe trained againſt walls.

Having remarked above, that in fig-trees, it is the year-old ſhoots only that produce the fruit, this however is often formed upon the ſhoots the preceding ſummer, appearing in autumn like very ſmall buds, as aforeſaid, at the places of the leaves; many alſo come out in ſpring, from which we are principally to expect our beſt crops: let it alſo be remarked, that in autumn after the main crop of ripe fruit is gone, you will generally ſee many green fruit remaining, quarter or half grown, theſe are ſuch that are produced early upon the ſame ſummer's ſhoots, which in warm countries arrive alſo to perfection the ſame ſeaſon; ſo that they have two crops annually, but theſe rarely ever attain perfection in England, unleſs aſſiſted by hot walls, nor will they ſtand the winter to come to perfection the ſucceeding year, therefore all theſe ſorts ſhould be pulled off at the fall of the leaf in autumn.

Fig-trees are the moſt uncertain of any in producing good crops of fruit in England, their young ſhoots and fruit being both very liable to ſuffer by froſt; for in ſome ſeaſons the young ſhoots do not ripen or harden, but remain ſoft, pithy, and full of juice, and the winter froſts often kill their upper parts, in which caſe but little fruit can be expected the ſucceeding ſummer, as the fruit is always principally produced towards the extremities of the ſhoots; therefore, to preſerve the ſhoots in ſevere winters, ſome of the choiceſt ſorts againſt walls, may be matted during the inclemency of the weather.

It is the robuſt, ſhort-jointed ſhoots that are the principal bearers; the long, ſtraight,

ſmooth ſhoots, ſeldom bear much; the former ſorts ſhould therefore be chiefly retained for bearing. See their *Culture*.

All the varieties of theſe trees proſper in any common ſoil of a garden, prepared by common digging, or trenching one or two ſpades deep.

They may be planted at fifteen or twenty feet diſtance, againſt walls and eſpaliers; and as ſtandards, any diſtance not leſs than fifteen feet from one another.

*Propagation.*

The propagation of fig-trees is effected with great eaſe three different ways, viz. by ſuckers ariſing from the root, by layers, and by cuttings.

By Suckers.—The trees commonly ſend up many ſuckers annually in ſummer, which, in autumn following, may be tranſplanted: in taking them off, go as low as poſſible to the old root; trim off any ragged part at bottom, leaving their tops intire, eſpecially if for ſtandards, and plant them in nurſery lines, two or three feet diſtance, or may be planted at once, where you deſign they ſhall remain to produce their fruit; obſerving, if they are deſigned for dwarfs, for walls, or eſpaliers, they, if long may be headed to ſix or eight inches in March, the more effectually to force out lateral ſhoots near the bottom, as obſerved of eſpalier and wall trees; but if intended for ſtandards, they muſt not be topped, but trained with a ſtem, not leſs than fifteen or eighteen inches for dwarf-ſtandards, a yard for half-ſtandards, and four, five, or ſix feet for full ſtandards, and then muſt be ſuffered to branch out to form a head, obſerving, that whether againſt walls, eſpaliers, or ſtandards, the branches or ſhoots muſt never be ſhortened, unleſs to procure a neceſſary ſupply of wood, for the fruit being always produced upon the upper parts of the young ſhoots, that if cut off, no fruit can be expected.

By Layers.—Autumn is the beſt ſeaſon, though it may be done any time from October till March or April. Chuſe the young pliable lower ſhoots from the fruitful branches, lay them in the uſual way, covering the body of the layers three or four inches deep in the ground, keeping the top entire, and as upright as poſſible, and they will be rooted, and fit to ſeparate from the parent in autumn, then plant them either in the nurſery, or where they are finally to remain, managing them as ordered above for the ſuckers.

By Cuttings.—Autumn, at the fall of the leaf, or any time in March, is the time to plant them: chuſe well ripened ſhoots of the preceding ſummer, ſhort, and of robuſt growth, from about twelve to fifteen inches long, having an inch or two of the two-years wood at their baſe, the tops left entire, and plant them ſix or eight inches deep, in a bed or border of good earth, in rows two feet aſunder: and when planted in autumn, it will be eligible to protect their tops in time of hard froſt, the firſt winter, with any kind of long looſe litter, managing them afterwards as the ſuckers.

*Culture as wall and eſpalier trees.*

Conſidered as wall and eſpalier trees, they ſhould be allowed a ſunny ſituation, being neceſſary to forward the ripening of the fruit, and promote a rich flavour: they ripen earlieſt in a full ſouth expoſure, but they will alſo ſucceed very well in an eaſt and weſt aſpect; and as to diſtance, fifteen or twenty feet is neceſſary; againſt a high wall the former diſtance is ſufficient, but if they are rather low, twenty feet ſhould be allowed.

With reſpect to training, that having headed down the firſt ſhoots, to procure bottom branches, as for other wall and eſpalier trees, the branches muſt be laid in a ſomewhat horizontal poſition, preſerving an equal number on both ſides of the tree, ranging to the right and left, at eight or ten inches diſtance, one above another; for the leaves being large, the branches ſhould be laid wide accordingly, training each alſo at full length, for reaſons before laid down, unleſs there is an immediate want of wood; a ſupply of branches, either to give the tree its firſt due formation for the wall or eſpalier, or as a farther ſupply to furniſh the wall, &c. in which caſes, ſome convenient ſhoots contiguous may be ſhortened to five, ſix, or eight inches, to force out laterals for the neceſſary ſupply; though theſe trees for the general part, naturally furniſh wood enough to render the work of ſhortening unneceſſary.

For, as I before obſerved, theſe trees always producing their fruit upon the upper parts of the young wood, the branches ſhould conſequently, in the general courſe of culture, be always trained at full length, as ſhortening would cut away the only bearing parts, and force out innumerable unneceſſary ſhoots; and it will be found, that the trees ſeldom fail to furniſh a natural ſupply of ſucceſſive young wood annually for each year's bearing; obſerve likewiſe, that in conſequence of the

trees

trees bearing fruit upon the year-old wood only, particular attention is requiſite to preſerve an annual ſupply of each ſummer's ſhoots in every part of the tree, not only one at the extremity of every branch, but likewiſe occaſionally in the lower parts, quite from the bottom, coming up in ſucceſſive order, one after another, at proper intervals, between all the principal branches; that every part of the wall or eſpalier may be occupied with bearing wood; and, as the lower young branches advance upward, the old naked ones that ſupport ſcarce any young wood, or ſuch that are too high for the wall, muſt be cut away either to their origin, or to ſome convenient young lower branch or ſhoot that they may ſupport, training that up to ſupply the place of the part cut out. By obſerving as above, you will be able to have every part of your wall and eſpalier tree full of fruitful wood, quite from the bottom to top, and ſide extremities.

With reſpect to pruning, two principal dreſſings is requiſite annually, to thoſe againſt walls, &c. that is, a ſummer and winter pruning and training.

Summer Dreſſing.—The trees commonly produce great numbers of young ſhoots every ſummer, frequently many more than are neceſſary; ſome of the moſt irregular and ill-placed ſhould be taken off, and the reſt trained in cloſe and at full length for next year's bearing, that by this regulation the ſun and air may be more effectually admitted, to promote the free growth and regular ripening of the fruit, the main object. June, July, and Auguſt for this work of ſummer dreſſing, obſerving, that in performing the operation, I would adviſe to take off only ſuch ſhoots that are very irregular, and ſuch others that cannot be poſſibly trained in; for in theſe trees, it is proper to retain in ſummer, when practicable, three times more than may ſeem neceſſary for the winter or ſpring training, becauſe the ſhoots being rather of a ſucculent, pithy nature, many of them are often killed in winter, ſo that by reſerving them all till the general pruning in ſpring, there may be a ſufficiency eſcape to chuſe from, to furniſh the tree, and if more than neceſſary, they are eaſily cut out, therefore in this dreſſing, take off principally only the foreright and other very irregular, and evidently uſeleſs ſhoots, rubbing or cutting them off quite cloſe; let the others be trained to the wall or eſpalier, between the main branches at full length, ſtill continuing them ſo, as they advance.

Obſerve however in the ſummer dreſſing, that if there is any great want of wood in any part, you may in June pinch or top any contiguous young ſhoots, whereby it will furniſh a ſupply of collaterals the ſame ſeaſon, to ſupply the vacancies.

If the above operation of ſummer dreſſing is begun early, before the ſhoots become woody, the redundant young wood may be rubbed off without employing a knife.

Winter or general Pruning.—Having obſerved above, that many of the young branches of Fig-trees are liable to be more or leſs damaged in ſevere winters, in conſequence thereof, it is adviſable to defer this general pruning till ſpring, reſerving till then all the ſhoots retained in the ſummer dreſſing, and out of the whole, enough may eſcape the froſt for our purpoſe, and if more than enough, the better, there will be the more to chuſe from; but if the general pruning was performed in autumn, or early in winter, and no more ſhoots left than what is juſt neceſſary to furniſh the wall or eſpalier, and many of theſe ſhould be deſtroyed by the inclemency of the weather, there is no reſerve left to ſupply the deficiencies; I would therefore adviſe the general pruning to be deferred till February or March.

This work of winter pruning, conſiſts of regulating the branches in general, old and young, taking out crowding and naked old branches, thining and ſelecting the proper ſupply of young ſhoots, cutting out all weak and ill ripened ones, and all dead wood.

With reſpect to the regulation of the principal branches, theſe ſhould be about eight or ten inches diſtance, that where they have been trained conſiderably cloſer, they ſhould now be thinned, and the contiguous ones all unnailed, that the whole may be trained regular at the proper diſtance, at the ſame time examine if there are any old naked branches, i. e. ſuch; that have advanced a conſiderable length, without furniſhing hardly any proper bearing ſhoots, or young branches furniſhed with ſuch and that, provided there is proper young wood favourably ſituated to ſupply their place; ſuch old naked branches ſhould be occaſionally cut out at this pruning, to the place from whence they proceed, or at leaſt down to the firſt beſt young ſhoot or branch, cutting them quite cloſe, never leaving any ſtump, ſo train the proper branches and ſhoots in its ſtead; having particular attention that every branch terminates in a young ſhoot, either ariſing immediately from its extremity,

or in default thereof, or that the end of the extreme ſhoot is dead, or that the branch is too long for its allotted ſpace, it may be ſhortened to the next firſt, ſecond, or third good ſhoots below, if any, as ſhall ſeem convenient, leaving each ſhoot at full length, unleſs its end is dead, when it muſt conſequently be cut down to the live wood.

From the principal branches paſs to the ſupply of young wood, produced and trained in the preceding ſummer, which, if they have eſcaped the froſt, there will be probably many more than is neceſſary now to be retained; and keeping in view, as we formerly hinted, that they are the only bearers, and a proper ſupply muſt be trained now for next ſummer's fruit: every branch muſt not only terminate in one at full length, by the rules elucidated above, but collateral ones ſhould alſo be here and there retained, ſome towards the bottom of the branches, others nearer the middle, and ſome more towards the extreme parts, &c. advancing at proper diſtance one after another, as it were in ſucceſſive order, between the principal branches; and that beſides the ſupply of fruit they will thus furniſh in every part, you will alſo have your wall or eſpalier ſo regularly filled with advancing young branches, that as old branches become naked, or two extenſive for the ſpace of walling or eſpalier allotted, as may be the caſe in ſome part or other of the tree every ſeaſon, there is always a reſource of theſe young branches coming up gradually to ſucceed them; therefore at every general winter or ſpring pruning, ſelect in the different parts of the tree, as above, a proper ſupply of the beſt ſhoots, ſuch as are robuſt, and their buds near together, and ariſe from the upper or under ſides of the branches convenient for training in, at the ſame time cutting off all long foreright and other ill-placed ones, and all others however good, that are redundant or ſuperfluous, cutting every thing quite cloſe to the ſurface of the branches, leaving all the ſelected ſhoots at full length, where practicable, for the reaſons already aſſigned; never ſhortening any only in caſe of dead parts, or want of an immediate further ſupply of ſhoots in any part to fill a vacancy.

Having therefore finiſhed this general pruning, let all the branches and ſhoots be faſtened in regular order to the wall or eſpalier, each at full length, and as ſtraight as poſſible, preſerving all the main branches eight or ten inches diſtance.

*Their Culture as Standard Trees.*

Standard Fig-trees, whether dwarfs or half or full ſtandards, after being trained to their proper form, as already directed in the article of propagation, may be planted either in the borders or open quarters of the kitchen garden, or in the pleaſure-ground, detached from other trees, and not nearer than fifteen or twenty feet to each other.

As to culture, they, in ſtandards require very little training or pruning, all that is neceſſary, is only taking out any very irregular branch, or when their general branches are too much crouded, to thin them diſcretionally, taking out the worſt and moſt irregular growing; obſerving alſo the ſame of the young ſhoots, where they are greatly crowded, thin out ſome of the ill-placed ones, and ſuch as are weak and ill-ripened, obſerving, that the ſhoots and branches are always to be left entire, except in caſes exhibited in the wall and eſpalier culture, as that of cutting off the dead ends of ſhoots, &c. and thus they will often bear plentifully, and ripen their fruit frequently in as great perfection as againſt walls.

*The Tender Species of Ficus.*

FICUS, &c. The following tender ſpecies of *Ficus* are preſerved in ſome of our hot-houſes, viz. by way of curioſity.

[1]FICUS *religioſa.*

*Sacred Fig, or Indian God-tree.*] Ficus with a woody ſtem, branching twenty or thirty feet high, heart-ſhaped entire leaves, ending in long acute points.

This is held in great veneration in India, where it is called the religious tree.

[2]FICUS *Sycomorus.*

*Sycamore and Mulberry-leaved Egyptian Fig-tree.*] Ficus with a robuſt ſtem, branching twenty or thirty feet high, and large, roundiſh, heart-ſhaped, entire leaves.

[3]FICUS *Benghalenſis.*

*Bengal Fig-tree.*] Ficus with ſeveral ſtems, dividing into many implicated branches, riſing twenty or thirty feet high, ſtriking root from their lower parts, and large, oval, obtuſe, entire leaves.

[4]FICUS *Indica.*

*Long-leaved Indian Fig-tree.*] Ficus with a robuſt ſtem, branching twenty or thirty feet high, and long, ſpear-ſhaped, entire leaves.

[5]FICUS *Pumila.*

*Dwarf Indian Fig.*] Ficus with trailing rooting ſtalks and branches, and oval, acute-pointed, entire leaves.

All

All theſe ſpecies are natives of hot countries, where moſt of them form large trees, but in our ſtoves appear as ſhrubs, and their fruit is of no value.

To preſerve them here they muſt be kept in pots and retained in the ſtove. Their propagation is by cuttings, in ſummer, planted in pots of light ſandy earth, and plunged in the bark-bed.

FILAMENTUM, Filaments, or thread-ſhaped parts of the ſtamina, which elevate the antheræ. See ANTHERÆ and STAMEN.

Filaments are in figure either ſlender like a hair, awl-ſhaped, wedge-ſhaped, or flat, ſometimes twiſted like a ſcrew, and ſometimes bent backwards, as in ſuperb lily, &c. and in many plants are covered with a fine cottony down; and as to proportion, Filaments in ſome plants are very long, in others very ſhort; of equal lengths, as in moſt flowers, or irregular and unequal, as in the lip and cruciform flowers, which two laſt circumſtances conſtitute the claſſes *Didynamia* and *Tetradynamia*. See CLASSIS.

The ſituation of the Filaments is, in flowers of one petal (*monopetala*), generally inſerted into the baſe of the corolla; in flowers that conſiſt of more than one petal, they are attached either to the calix, as in the claſs *icoſandria*; or to the receptacle, as in the claſs *polyandria*; but in ſome genera, the Filaments are neither inſerted into the calix, corolla, nor receptacle, but into the piſtil or ſtyle, as in all the genera of the claſs *gynandria*.

From the number of Filaments in flowers, is founded the firſt thirteen claſſes. See CLASSIS.

FLOS, the Flower, or parts of fructification of plants, &c.

A Flower is defined to be formed of all the parts of fructification neceſſary for the generation of all trees and plants, and conſiſts of the following principal parts.

The *Calix*, empalement or cup; the outer green leaves immediately ſurrounding the corolla or petals. See CALIX.

The *Corolla*, petals; or flower-leaves the fine-coloured leaves placed within the calix, and which immediately ſurround the ſtamina, &c. See COROLLA.

The *Stamina*, or male organs; the ſlender thread-ſhaped parts, ſupporting the antheræ, placed immediately within the corolla, and ſurround the piſtillum. See STAMEN.

The *Piſtillum*, or female organs; conſiſting of the germen, ſtyle, and ſtigma, and are placed within the antheræ, and commonly occupy the centre of the flower. See PISTILLUM.

The *Pericarpium*, the fruit or ſeed-veſſel, formed of the germen of the femal organ, and ſucceeds to maturity after all the other parts of the Flower are decayed. See PERICARPIUM.

The *Semen*, or ſeeds, lodged within the pericarpium, or in default thereof, in the bottom of the calix, &c. See SEMEN.

Each of the above parts of a flower is fully explained under its reſpective head, which ſee.

But as many Flowers have neither calix nor corolla, they are ſtill to be conſidered as a Flower, provided it is furniſhed with the *antheræ* or tops of the male organ, and the *ſtigma* or ſummit of the ſtyle, the female organ, for the eſſence of a Flower conſiſts in theſe two principal organs *antheræ* and *ſtigma*.

In many plants however we have not been able to diſcover any reſemblance of Flower or fruit, ſuch as the ferns, moſſes, muſhroom, &c. but it is probable they are all furniſhed with ſimilar parts, although their minuteneſs or concealed ſituation within the plant, prevents any diſcovery thereof.

FOLIOLA, Folioles, the leſſer Leaves or lobes of a compound Leaf.

FOLIUM, a leaf, or leaves, defined to be the organs of vegetation, and principal ornament of plants.

Leaves are ſuch uſeful and neceſſary organs, that they attract and tranſpire the air for the vegetable ſupport and life of the plants, as well as promote the growth of the flowers, fruits and ſeeds of every ſort. Trees periſh when totally diveſted of them at an improper ſeaſon, witneſs thoſe which have undergone the depredations of inſects and blights; likewiſe the practice of ſtripping off ſome leaves from plants, when we would ſuſpend their growth; and ſometimes in cold years, to admit the ſun to accelerate the ripening of choice wall fruit; but in this caſe, it ſhould not be practiſed till the fruit have acquired nearly their full bulk, and then only juſt thin out ſome where they too cloſely ſhade the fruit, for the leaves contribute greatly to their growth.

Far the greater number of plants are furniſhed with Leaves, though in ſome they are totally wanting, as in the *fungi* or muſhroom tribe, ſhrubby horſe-tail, and ſeveral kinds of fleſhy ſucculent plants.

All foliated plants and trees however, are not always adorned with Leaves, as for example, all the deciduous tribe are totally diveſted

veſted of them during the winter; but moſt ſorts both deciduous and ever-greens, produce new Leaves every year.

Leaves are of various figures, but generally extended into a plane membranaceous or ſkinny ſubſtance, and formed by the expanſions of the veſſels of the foot ſtalk, which divide into many ramifications or branches, croſſing each other, form a kind of net, the meſhes or interſtices, of which are filled up with a tender pulp or pith; this pulpy ſubſtance being ſometimes conſumed by certain inſects, whilſt the net-work remaining, exhibits the ſkeleton of the Leaf.

All leaves have one ſide very diſtinguiſhable from the other, an upper and under ſurface, the former turned towards heaven, the latter downward, and this diſpoſition is ſo eſſential to the vegetable oeconomy, that if a branch is overturned in ſuch a manner as to deſtroy the natural direction of the Leaves, they will, of themſelves, in about a week or little more or leſs time reſume their former poſition, and that as often as a branch is overturned; it is alſo obſervable, that from the time the Leaves are turned into a contrary direction, till they have recovered the natural poſition, the fruit makes hardly any progreſs in growth, which ſhews how neceſſary it is to preſerve all the branches of wall and eſpalier-trees firmly in their proper places, and when any is overturned by wind or other accidents, no time ſhould be loſt in faſtening them up again, before the Leaves take a wrong direction.

Leaves conſidered with reſpect to their form and diſpoſition, may be divided into three claſſes, Simple, Compound, and Determinate.

*Simple Leaves.*

Simple Leaves are ſuch as grow ſingly on a foot-ſtalk, or a foot-ſtalk terminated by a ſingle expanſion only, either entire or divided; that however deep the diviſions, if they do not reach the middle rib, it is ſtill a ſimple leaf; and as their different ſhapes, both entire and divided, are numerous, we will here exhibit the moſt material, each according to the botanic term or name.

*Aceroſum*, chaffy; ſuch as are very narrow and ever-green, as yew, pine, fir, and cedar.

*Acinaciforme*, ſcymitar-ſhaped; being fleſhy, ſpear-pointed, having one edge narrow and convex, the other broad, as in *Meſembryanthemum Acinaciforme*.

*Aculeatum*, aculeate or prickly; as in ſome of the thiſtles.

*Acutum*, acute; terminated by a ſharp point.

*Acuminatum*, acuminate; having the extremity ſharp, like the point of an awl.

*Anceps*, two-edged.

*Bullatum*, bullated; bliſtered, or ſtudded.

*Bifidum*, bifid; divided into two parts.

*Canaliculatum*, channelled or fluted.

*Carinatum*, carinate, or keel-ſhaped; as in keel-ſhaped *aloe*.

*Carnoſum*, carnoſe, or fleſhy.

*Cartilagineum*, cartilaginous; having a griſtly, thick, fleſhy edge, different from the other part of the Leaf.

*Ciliatum*, ciliated or eye-laſhed; having the edge ſurrounded longitudinally with parallel hairs.

*Cirrhoſum*, cirrhoſe; ending with cirrhi, tendrils, or claſpers.

*Coloratum*, coloured; as in *Amaranthus tricolor*.

*Compreſſum*, compreſſed; having a mark of impreſſion equally on both ſides.

*Concavum*, concave, hollow; the ſurface hollow in the middle, oppoſed to convex.

*Convexum*, convex; the middle riſing higher than the ſides.

*Cordatum*, *Cordiforme*, } cordated, cordiform, or heart-ſhaped, as in the lime-tree.

*Cordatum-obverſe*, obverſely cordated, or heart-ſhaped reverſe.

*Crenatum*, crenated or notched; having the border indented or notched, that the indentings turn neither towards the top nor baſe, and are termed

——— *acutum*, when acutely or ſharply crenated; having the indentures ſharp at the ends.

——— *obtuſum*, obtuſe or bluntly crenated; having the ends of the indentures rounded.

——— *duplicato*, doubly crenated; having ſmall notches on the larger crenatures.

*Criſpum*, criſped, curled; as in curled-mallow, curled-parſley, &c.

*Cuneiforme*, wedge-ſhaped; being much longer than broad, narrowing gradually from the top.

*Deltoide*, deltoid, quadrangled; having four angles, thoſe at the extremities more diſtant from the centre than thoſe of the ſides, as in *Meſembryanthemum deltoides*, and *atriplex Halamus*.

*Dentatum*, indented; toothed, or having the borders ending in horizontal points.

*Depreſſum*, depreſſed; having a mark of impreſſion on one ſide.

*Delabriforme*,

*Dolabriforme*, hatchet-ſhaped, is compreſſed, projecting outward with a ſharp edge.

*Emarginatum*, emarginated; notched at the top, and are termed

——— *acutum*, when acutely emarginated; having the parts on each ſide, ending in ſharp points.

——— *obtuſum*, obtuſely emarginated; having the two ſides ending in blunt points.

*Integerrimum*, entire; having the borders entire, or free from all intendings or notches.

*Enſiforme*, ſword-ſhaped; being compreſſed and edged like a ſword.

*Eroſum*, eroſe, gnawed; the border ſeems to be gnawed.

*Gibbum*, gibbous, ſwoln; both ſurfaces ſwelling to a convexity.

*Glabrum*, glabrous, ſmooth.

*Glaucum*, glaucous, grey, or of a ſea-green colour.

*Haſtatum*, halbert-ſhaped; triangular, extended wide at the baſe, narrowing to a long ſharp point at top.

*Hirſutum*, hairy and briſtly; having the ſurface covered with hairs like ſhag.

*Hiſpidum*, ſtinging; being covered with hairs, which ſtrike into the fleſh.

*Laceratum*, lacerate, or with a rent, or ragged, irregular border.

*Lanatum*, woolly.

*Lanceolatum*, lanceolate, lancet-ſhaped, or ſpear-ſhaped; narrowing gradually from the middle to each end.

*Laciniatum*, lacinate, or jagged; having ſinuſes or cuts down to the middle, divided, as it were, into ſegments, which are jagged on the edges.

*Lineare*, very narrow, and equally broad; as in roſemary, pine, fir, and the graſſes.

*Linguiforme*, tongue-ſhaped; being commonly fleſhy and compreſſed.

*Lobatum*, lobed; divided into two, three, or more lobes, termed,

——— *biloba*, two-lobed.

——— *triloba*, three-lobed.

——— *quadriloba*, four-lobed.

——— *quinqueloba*, five-lobed, &c.

*Lunulatum*, lunulate or moon-ſhaped; being ſhaped like a half moon.

*Lyratum*, lyre-ſhaped; divided into tranſverſe ſegments, the upper ones the largeſt.

*Membranaceum*, membranous; without pulp between the two ſurfaces, as in moſt.

*Nervoſum*, nervoſe; having nerves or veſſels, extending ſingly from the baſe to the extremity.

*Nitidum*, ſhining and gloſſy.

*Nudum*, naked; without any kind of hair or pubeſcence.

*Oblongum*, oblong; twice as long as broad.

*Obtuſum*, obtuſe; blunt, rounded at the extremity.

*Orbiculatum*, orbicular, round; being orbicularly round, as in *Craſſula orbiculatum*.

*Ovale*, oval, or eliptic.

*Ovatum*, egg-ſhaped.

——— *obverſe*, obverſely egg-ſhaped, by the ſmall end being affixed to the ſtalk.

*Palmatum*, palmated, or hand-ſhaped; being deeply divided longitudinally down to the baſe into ſeveral parts, ſpreading out like an open hand.

*Panduriforme*, fiddle-ſhaped.

*Papilloſum*, papilloſe, covered with pimples or veſicles, as in *Meſembryanthemum cryſtalinum*, or diamond ficoides.

*Parabolicum*, parabolical; half egg-ſhaped.

*Partitum*, partite; being divided down to the baſe, which if into two, three, four, five, or many parts, are termed.

——— *bipartite*, divided into two parts.

——— *tripartite*, divided into three parts.

——— *quadripartite*, divided into four parts.

——— *quinquepartite*, divided into five parts.

——— *multipartite*, divided into many parts.

*Peltatum*, peltate, target-ſhaped; having the foot-ſtalk inſerted into the centre of the lower ſurface, and not into the baſe, or margin, exemplified in Palma Chriſti and water-lily.

*Pentangulare*, pentangular, or five-angled.

*Pentagonum*, five-ſided; having five flat ſides.

*Piloſum*, piloſe; covered with diſtinct hairs.

*Pinnatifidum*, pinnatifid; being divided horizontally into many long ſegments, reſembling a pinnated, or winged-leaf.

*Pinnatum*, pinnated. See *Compound Leaves*.

*Planum*, plane, flat; having an even plane ſurface.

*Plicatum*, plicate, plaited, or appearing like folds, by the ſurface riſing and falling in angles, as in *Alchimella*.

*Punctatum*, punctate; dotted, or ſet with hollow points.

*Quadrangulare*, quadrangular; four-edged, or four-angled.

*Quinquangular*, five-angled; the ſame as pentangular.

*Reniforme*, kidney-ſhaped; as in common *Aſarabacca*.

*Repandum*,

*Repandum*, repand, or ſerpentine; having the edges ſinuated in a ſerpentine manner.

*Retuſum*, retuſe; blunted at the end.

*Rugoſum*, wrinkled; having the veins ſunk, ſo that the ſurface appears uneven.

*Sagittatum*, ſagittate, arrow-ſhaped; being ſhaped like the head of an arrow.

*Scabrum*, rough, rugged; having the ſurface covered with little irregular tubercles.

*Serratum*, ſerrated, or ſawed; having the edges notched like a ſaw, the indentings bending towards the top of the leaf: there are alſo,

——— *retrorſum*, ſawed backward.

——— *obtuſo*, obtuſely ſawed; having the indentings obtuſe and weak.

——— *duplicato*, doubly ſawed; having ſmall ſerratures upon the greater.

*Seſſile*, ſitting cloſe. See *Determinate Leaves*.

*Sinuatum*, ſinuated; having ſinuſes or hollows along the border or margin.

*Spatulatum*, ſpatula-ſhaped; being oblong, widening and rounded upward, but narrow below.

*Striatum*, ſtreaked, or with many ſlight longitudinal furrows or ſtripes on its ſurface.

*Spinoſum*, ſpinous or thorny; as *Acanthus ſpinoſus*, &c.

*Sulcatum*, furrowed or ridged; having a number of longitudinal ridges.

*Subrotundum*, roundiſh; almoſt orbicular, only being a little broader or larger, in ſome part or other.

*Subulatum*, ſubulate, awl-ſhaped; being broadeſt at the baſe, contracting gradually to the extremity, into a ſharp point.

*Succulentum*, ſucculent; generally thick, fleſhy, and full of moiſture, as in *Aloe*, *Cotyledon*, &c.

*Teres*, cylindric, and tapering.

*Tomentoſum*, tomentoſe; downy, cloſely covered with fine velvety down.

*Trilobatum*, trilobed, or three lobed; divided into three lobes or ſegments.

*Triangulare* triangular; forming three angles, the two loweſt being level with the baſe.

*Trigonum*, trigonal, three-ſided, or three-edged; having three ſides, and as many ſharp edges, and grow narrow from the baſe to the extremity.

*Triquetrum*, three-ſided like the former, but the ſides are flatter, and the edges not ſo prominent.

*Tetragonum*, four-ſided.

*Truncatum*, truncate; when the points ſeems to be cut off tranſverſly, as in *Liriodendron tulipifera*, tulip-tree.

*Tubuloſum*, tubuloſe, or hollow within; as in *Allium*, *Cepa*, the onion.

*Venoſum*, venoſe, veined; having many branched veſſels, like veins running through the ſurface.

*Viſcidum*, viſcid; viſcous, clammy or glutinous.

*Undulatum*, undulate, waved; riſing and falling in convexities towards the margin.

### *Compound Leaves.*

A compound Leaf, is that which is compoſed of two, three, or many ſmaller Leaves or *foliola*, ſupported on one common foot-ſtalk, which aſſemblage of folioles or lobes, if ever ſo large or numerous, on one petiola, or general foot-ſtalk, conſtitute but one Compound Leaf, *folium compoſitum*; theſe ſmaller leaves or folioles, conſtituting the compound, are, ſingly of themſelves, ſmall ſimple Leaves, varying in their form, according to the diſtinction already given, and are ſometimes furniſhed with ſhort foot-ſtalks (*petiolatum*) iſſuing from the main one, ſometimes ſeated cloſe (*ſeſſile*) to the middle rib, without any proper foot-ſtalk of their own.

Compound Leaves may be divided into three claſſes or diviſions.—1. The compound properly ſo called, being only once compounded, the *foliola* being ſupported immediately on the main foot-ſtalk.—2. Decompound, twice compounded; the foot-ſtalk dividing into leſſer, and on which the *foliola* are ſupported.—3. Supradecompound, ſeveral times compounded; the main foot ſtalk dividing into others, theſe ſubdividing into ſmaller, and on which are ſupported the folioles: each of which three claſſes of compound, admit of a variety of modifications, which gives riſe to as great a variety of terms, viz.

*Binatum*, binate; two, formed of two folioles on one foot-ſtalk.

*Ternatum*, ternate; three, having three folioles.

*Digitatum*, digitate, fingered; having ſeveral long lobes attached to the top of the foot-ſtalk, and ſpread out like the fingers of a hand.

*Quinatum*, quinate, five-lobed.

*Pinnatum*, pinnated or winged; having many folioles arranged along each ſide of the rib, or prolongation of the common foot-ſtalk like wings, as in Acacia, Sumach, and hence called pinnated or winged leaves, of which are the following modifications,

——— *cum impari*, completely pinnated; a winged-leaf terminated by an odd foliole,

liole, proceeding from the extremity of the middle rib.

*Pinnatum abrupta*, abruptly pinnated; not terminated by an odd lobe.

——— *oppoſita*, oppoſitely pinnated; the folioles ſtanding oppoſite to each other.

——— *alternæ*, alternately pinnated; the lobes placed alternately.

——— *interrupta*, interruptedly winged; the folioles being alternately larger and ſmaller.

——— *cirrhoſum*, cirrhoſe pinnated; the extremity terminated by a *cirrhi*, or claſper.

——— *decurrens*, decurrently pinnated; having the folioles running along the mid-rib from one to the other.

——— *conjugata*, conjugate pinnated; paired, the winged-leaf compoſed of one pair of folioles only.

*Decompoſitum*, decompound leaves, or twice compound; having the main foot-ſtalk divided into ſmaller, and theſe ſmaller ones ſupport the lobes.—And of this kind of compound leaves are:

*Biternatum*, or *ternatum-duplicato*, doubly three-lobed; the foot-ſtalk dividing into three ſmaller, each ſupporting three *foliola*.

——— *pinnatum duplicato*, doubly pinnated; the main foot-ſtalk, having ſmaller ones arranged on each ſide, and on theſe are arranged the folioles.

——— *bipinnatum*, doubly-winged, as the former.

——— *pedatum*, pedate, or foot-ſhaped; the foot-ſtalk divides, and has the folioles ranged on the inſide.

*Supradecompoſitum*, ſupradecompound, or ſeveral times compounded; the main foot-ſtalk, dividing into others, theſe dividing into ſmaller, and upon which are ſupported the lobes or *foliola*. And admits of the following varieties:

——— *ternatum triplicato*, triple three-leaved; the foot-ſtalk divides into three ſmaller, each of theſe into three others, and each of which ſupport three lobes or *foliola*.

——— *pinnatum triplicato*, triple-pinnated, or triple-winged; the main foot-ſtalk ſupporting ſmaller along each ſide, theſe alſo have ſmaller ones iſſuing from both ſides, and upon each ſide of theſe latter are ranged the *foliola*.

*Determinate Leaves.*

By Determinate Leaves, whether ſimple or compound, is not conſidered their figure, or ſtructure, but their place, ſituation, and inſertion on the parts of the plant, and their direction.

*Adpreſſum*, appreſſed; laid cloſe to the ſtem.

*Adverſum*, adverſe; turns its ſide towards the ſouth, not upward.

*Alternatum*, alternate; the reverſe of oppoſite, being placed ſingly one above another, gradually on each ſide of the ſtem.

*Amplexicaule*, its baſe embraces the ſtem quite round.

*Axillare*, axillary; ariſing from the angle between the branch and the ſtem, or that between the greater and ſmaller branches.

*Articulatum*, articulate, or jointed; one leaf growing on the top of another.

*Caulinum*, cauline, or ſtem Leaves; ſuch as grow immediately on the ſtalk or ſtem.

*Confertum*, confert; growing in cluſters.

*Connatum*, connate; Leaves growing oppoſite, connect or unite at their baſe appearing as one, as in ſome ſpecies of honeyſuckle.

*Decurrens*, a decurrent or running Leaf; having the baſe running along the ſtem, as in ſome thiſtles.

*Demerſum*, demerſe; ſunk under water.

*Dependens*, dependent; pointing downward to the earth.

*Diſtichum*, diſtich, two rowed; being ranged along two ſides of the branches only.

*Erectum*, erect; upright, ſo as to make an acute angle with the ſtem.

*Faſiculatum*, faſiculate; cluſters from the ſame point, as in the larch-tree.

*Florale*, floral; placed near the flower.

*Horizontale*, extended flat or parallel to the horizon; forming an exact right-angle with the perpendicular.

*Imbricatum*, imbricate; growing over one another like tiles, or ſcales of fiſhes.

*Inflexum*, inflex; turning the point towards the plant.

*Natans*, natant; floating on the ſurface of the water.

*Obliquum*, oblique; the baſe riſing upward, and the point towards the horizon.

*Oppoſitum*, oppoſite leaves; the reverſe of alternate; being ſuch as grow in pairs exactly oppoſite.

*Patens*, patent, ſpreading; recedes from the ſtem ſo as to form an acute angle therewith.

*Perfoliatum*, perfoliate; ſurrounds the ſtem or branch, without touching it with its margin or border, appearing as if perforated by the ſtem running through its diſk or middle.

*Peltatum*, peltate, ſhield-ſhaped; having the foot-ſtalk attached to the middle of its

diſk, not to the edge; reſembling the form of a ſhield, or target.

*Petiolatum*, petiolate, foot-ſtalked; having a foot-ſtalk.

*Quaternate*, four ſurrounding the ſtalk at a joint.

*Quinternate*, five ſurrounding the ſtalk at a joint.

*Radicale*, radical; ariſing directly from the root.

*Radicans*, radicant, rooting; ſtrikes root in the ground.

*Ramoſum*, rameous, a branch leaf; placed on the branches.

*Reclinatum*, reclined, bending downward; the extremity lower than the baſe.

*Revolutum*, revolute; rolled back.

*Semi-amplexicaule*, half embrace the ſtalk or branch, with its baſe.

*Seminale*, ſeminal, or ſeed-leaf; ſpringing directly from the ſeed.

*Seſſile*, ſeſſil; ſitting cloſe to the ſtem or branch, without any foot-ſtalk.

*Sparſum*, ſparſed, ſcattered; placed irregular, without any order.

*Stellatum*, ſtellate, ſtarry; ſeveral ſurrounding the ſtalk at each joint, expanding in a ſtar-like manner.

*Ternatum*, ternate; three ſurrounding the ſtem at a joint.

*Vaginans*, vaginant, ſheath-like; ſurrounding the ſtalk like a ſheath, as in the graſſes and many liliaceous plants.

*Verticillatum*, verticellate, whorled; many leaves, placed round the ſtalk at the joints, in whorls or whirls.

The foregoing liſt of the botanic terms, and ſhort deſcriptions of the various kinds of leaves, will aſſiſt in conveying an idea of their forms and determination, &c. according to the terms uſed in deſcribing them in the various ſpecies and varieties in each genera.

The Leaves furniſh very elegant and natural marks in deſcriminating the ſpecies of plants; in no part is nature more various than in the ſtructure of the Leaves, by which very numerous ſpecies are determined, and ought always to be ſtudied by the young botaniſt.

FORCING FRAME, a ſort of glaſs-caſe, or light building, fronted with glaſs Frames, in which to force flowers and fruits to early perfection, by aid of artificial heat, either of dung, tanner's-bark, or actual fire.

The general acceptation or meaning of a Forcing Frame is, a fixed erection full to the ſouth ſun; the length may be from ten to fifty, or one hundred feet; the width from five to fifteen, and from five to ten high; having an upright back wall, of wood or brick; and a front of glaſs-work, made ſometimes in one continued range of ſlope to the top of the back wall; and ſometimes with upright glaſs-work, head high, ranging immediately along the front, and from the top of which a glaſs roof is carried to the top of the back or main wall; either of which may be for univerſal uſe, for the reception of various ſorts of flower-plants, ſmall flowering ſhrubs, and dwarf fruit-trees, &c. occaſionally, to force into bloom or fruit in winter, or early in ſpring and ſummer; whereby many ſorts of the more curious flowers and fruits may be obtained ſome months before their natural ſeaſon, which will be a great curioſity, and which is effected, as aforeſaid, by aid of dung, bark, or fire-heat; the former (dung-heat) by applying it principally againſt the outſide of the back wall; the ſecond (bark heat) by forming it into a bed, in a pit within-ſide, and the third (fire-heat) by having ſeveral returns of flues againſt the inſide of the back wall for the heat to paſs along; each of which hereafter deſcribed: for theſe kind of Frames are of different conſtruction, according to the ſorts of plants chiefly intended to be forced; and the materials of heat, as dung, bark, or fuel, moſt convenient to be obtained for forcing them; ſo that the conſtruction of each kind of Frame is ſeparately exhibited.

Many of theſe Frames are employed in the vicinity of London, for forcing various plants early for market, particularly for Covent-garden, where, in early ſpring, in March, April, and May, we ſhall ſee exhibited for ſale various ſorts of flowers, fruits, and other eſculents, that would not, in their natural ſtate of growth, have appeared till June or July.

But, for private uſe, where there is a roomy pine-apple ſtove, it may alſo be uſed occaſionally, for forcing many ſorts of plants, flowers, and fruits, with equal ſucceſs, ſufficient for the ſupply of a family.

However, where conſiderable ſupply is required for market, Forcing Frames diſtinct from the pine-ſtove are alſo neceſſary.

In either of theſe departments may be introduced for forcing, pots of ſtrawberries, kidney-beans, roſes, honeyſuckles, jaſmines, and any other flowering ſhrubs; likewiſe carnations, pinks, ſweet-williams, wall-flowers, ſtock-gilliflowers, narciſſuſes, jonquil, and

and early tulip roots, and any other kind of flower-plants or roots, that may be required early for curiosity; also several kinds of curious annuals, as balsamines, gomphrenas, &c. and may likewise have several sorts of dwarf fruit-trees, as early May and May-duke cherries, peaches, nectarines, apricots, figs, grapes, gooseberries, currants, raspberries, &c.

The general construction of each sort of these Frames is exhibited under separate heads, according to the materials of heat used in forcing them, viz. by dung-heat, bark-bed heat, and by fire-heat.

*By Dung-heat.*

By Dung-heat.—This is not only the most simple and cheapest kind of Forcing Frame in its construction, but also considerably the cheapest in working, with respect to the article heat, as it may be forced effectually by substantial linings of hot-dung against the back and ends.

This Frame is formed with an upright back and ends of deal planking, and a sloping front of moveable glass-lights; the length may be ten, twenty, or thirty feet, or more; the width, from three to five, and five or six high; let the Frame work be of inch deal planking, tongued, and closely joined, that no steam from the dung may penetrate into the Frame; raised five or six feet high behind, and but ten or twelve inches high in front, raising both ends answerable to the front and back; the glass-work to range, from the upright in front, sloping upward towards the back wall, to about a foot width at top, there resting the ends upon proper Frame-work of wood, and bars or bearers three inches width, must range from the back to front, for the support of the lights, as in common hot-bed frames, and the top of all to be boarded wind and water tight; within-side may be two or three ranges of narrow shelves along the back and ends, for pots of small plants, and the bottom levelled, on which to place pots of larger kinds; or you may have shelves rising one behind another quite from the front half way up the back wall, so may place the lowest plants in front, the others in order behind them, rising gradually to the tallest in the back row.

From the above general sketch, you will easily form an idea of the proper construction of a dung-heat Forcing Frame; you may improve as you shall see convenient.

This kind of Frame is much used about London, where dung is so plenty, and easily obtained; and is there particularly used for forcing roses, or any other small flowering plants, whose flowers have merit in beauty or fragrance—may also try pots of dwarf-cherries, peaches, &c. also pots of gooseberries, currants, and strawberries, carnations, pinks, and the like; having all the sorts in pots separately, and in which they are to be placed in the Frame.

The season to begin to work this Frame, is January and February, and may be continued occasionally till May; but for any kind of fruit trees, the beginning of February is time enough, though those plants of any kind, that are designed to be forced, may be placed in the Frame a month or two before forcing time, to be occasionally protected with the glasses in hard frosts, but at other times, let them enjoy the full air till you begin forcing.

The method of working this Frame is, thus: after having placed the pots of plants in regular order, the tallest behind, and the lowest in front, &c. then put on the lights, and having a due quantity of fresh stable-dung, full of heat, prepared as for common dung hot-beds, let it be piled up close against the back and ends a yard wide at bottom, drawing it gradually into a foot width at top of the Frame, finishing it somewhat sloping, to through off wet; observing, that according as the dung settles or sinks down, a fresh supply must be added at top, to maintain the lining to the full height of the Frame.

This lining will effectually throw in a fine growing heat, and soon set all the plants in motion; observing to give air in the middle of fine days, by sliding one or more of the lights a little down; give also moderate watering occasionally in mild sunny weather, and cover the glasses in cold nights with mats.

In three or four weeks, when the heat begins to decrease considerably, it must be renewed, either by entire fresh dung, or if new dung is scarce, by shaking up the old, taking the worst away, and mix the remainder with a due quantity of new, working the whole again in a pile close against the back and ends as before, which work must be repeated every three weeks or month, or as often as you shall see occasion; for the heat must be constantly preserved to a regular brisk temperature.

A Frame of the above construction may be appropriated entirely for fruit trees, planting them in a border prepared within the Frame

againſt the back wall, and trained in the manner of wall-trees to a trellis, ranged five or ſix inches from the back erection; in which may be planted early dwarf-cherries, peaches, nectarines, apricots, grapes, figs, currants, &c. ſo may be worked by dung-heat againſt the back of the Frame as above directed; beginning in February, and continuing the glaſſes on, as well as ſupport the dung-heat until May, and there is no doubt, with good management, but that the different ſort of fruit may be brought to perfection early.

*By Bark-bed heat.*

By Bark-bed heat.—This kind of Forcing Frame is worked by aid of tanners bark hot-bed, formed in a pit within-ſide the whole length. See BARK-BED and BARK-PIT.

This Frame may be formed either of wood or brick-work, and fronted, &c. with ſaſhes of glaſs like the former; the length may be ten, twenty, or thirty feet, or more; eight or ten wide, and ſix or eight high: and may be conſtructed either nearly like the dung-heat Frame, ſix or eight feet high behind, and one in front, the ends conformable, and ſloping Frames of glaſs-work raiſed from the front, ſloping either quite to the top of the back wall, or to incline only about one half towards that part, meeting a tyled roof at top half way, which ſhould be raiſed high enough in front to throw the water off behind, as well as to admit as much ſun as poſſible to every part of the Frame; or it may be conſtructed with an upright front of glaſs, head high, and a ſloping roof of glaſs-work, ranging from the upright front, to the top of the back wall, which is rather the moſt eligible form, both for convenience and benefit of the plants; either of which conſtructions may be erected detached, or againſt a ſouth wall already built, which will ſerve for the back, and ſave ſome expence; the ends may either be of wood or brick, but would be much better if glazed like the front, &c. and the glaſs-work in every part ſhould be made to move on and off, as well as to ſlide backward and forward to give air, and to do other neceſſary work; and at one end next the back wall, may be a door to enter occaſionally; and within-ſide muſt be a pit for the bark-bed, three feet deep, continued the whole length, and width, except about a foot and half alley to go in to perform the neceſſary culture, as well as to view and gather the produce of different plants.

The pit within is to be filled with new tan any time in winter or ſpring, you intend to begin forcing, though January is ſoon enough, and the beginning of February is not too late; the bark will ſupport a growing heat three months, and if then ſtirred up to the bottom, will renew its heat, and continue it two months longer.

In this Frame may plunge in the bark-bed, pots of roſes, or any other choice flowering ſhrubs you would force into an early bloom; likewiſe may place pots of ſtrawberries towards the front and top glaſs, and pots or troughs of kidney-beans may be placed in any part of the Frame; alſo pots of dwarf fruit-trees, before mentioned, pots of double pinks, carnations, and any other moderate-growing fibrous-rooted perennials, as well as any ſorts of bulbous, or tuberous-rooted flowers, as narciſſuſes, jonquils, tulips, anemones, ranunculus, and various other ſorts.

The heat of the bark-bed will effectually warm the internal air ſufficiently to forward any ſorts of hardy flowers and fruits to perfection, at an early ſeaſon; obſerving, that, although they do not always flower and fruit ſo abundantly as in the full ground, yet, if there is but a few of any ſort, a month or two before their natural ſeaſon, they, if for ſale, will ſufficiently pay; and if for private uſe, they will always be acceptable as a rarity, and curioſity in the family.

Freſh air muſt be admitted in fine ſunny days at all opportunities, by ſliding ſome of the glaſſes more or leſs open, keeping all cloſe on nights.

Give water alſo occaſionally in moderate quantities.

When the heat of the bark declines conſiderably, do not omit forking it over to the bottom, which will revive the decaying heat ſix or eight weeks longer.

A bark-heat Forcing Frame, nearly of the above dimenſions, might be contrived entirely for forcing valuable fruit-trees, having a border within-ſide along the back wall three or four feet wide, there plant young bearing dwarf fruit trees of any ſorts before mentioned, at ſix or eight feet diſtance, in the manner of wall or eſpalier-trees, training them alſo in the ſame manner as directed for the reſpective ſorts, in their natural ſtate of growth. The bark-pit ſhould here be almoſt entirely ſunk; in the beginning of February fill the pit with new bark, which will ſoon ſet the trees into bloom, and will ripen their fruit early; and the late ſorts of fine grapes, which do not ripen kindly

kindly here in the full ground, may be brought to perfection.

But the moſt eligible general Forcing Frame for various ſorts of plants is one of the above-mentioned conſtructions, having alſo flues for fire-heat; the walls muſt be of brick-work, having three or four returns of flues formed of the ſame materials, running the whole length of the back wall within, to make fires occaſionally in ſevere froſts, or on cold nights; alſo in very cold damp weather, which will be a great improvement in very early forcing, ſo that this kind of Frame will be nearly of the plan of a ſtove or hot-houſe. See HOT-HOUSE.

In default however, of any of the above kinds of bark-heat Forcing Frames, one might be effected by a common bark-pit, ſee BARK-PIT; filling it a yard deep with tan, and in which may plunge pots of roſes, or any other ſhrubs, any ſort of low herbaceous flowering plants, fibrous, or bulbous-rooted, kidney-beans, ſtrawberries, &c.

*By Fire-heat.*

By Fire-heat.—This kind of Forcing Frame is worked by actual fire, burned in a furnace behind at one end or middle, from thence communicating the heat by flues or funnels, running the whole length of the back wall in three, four, or more returns one above another, and is often employed for ripening ſeveral of the more valuable tree-fruits at an early ſeaſon; or for forwarding ſuch to perfection, which do not ripen freely in our climate without ſuch artificial aids, particularly ſome ſorts of grapes; and in which Frame the whole bottom-ſpace muſt be good earth two ſpades deep, for the reception of the trees, &c. for they are to be planted fully in the ground.

This Frame muſt be formed of brick-work, at leaſt the back or main wall, for the convenience of having fire and flues, and the whole front, &c. muſt be glaſs like the other ſorts; the length may be from twenty to forty or fifty feet, or more, though one fire will not warm more than that length; the width may be from four or five to twelve or fifteen feet, and eight or ten high. It may be contrived either of moderate width for one row of trees only, to range againſt the back wall, or may be capacious enough to have a range of dwarf-trained trees behind, as juſt mentioned, and ſome young half or full ſtandards, ranging alſo from the back to the front, or entirely for ſtandards, eſpecially thoſe of cherries.

If it is therefore intended to have a narrow Frame for only a row of trained trees behind, the width from four to five or ſix feet is ſufficient, having the back or main wall formed of brick or ſtone, as aforeſaid, eight or ten feet high, with ſeveral flues within-ſide, returned over each other, running the whole length of the wall; in the front muſt be a low wall a foot high, on which to lay a plate of timber, and from which is ranged glaſs frames or lights in one continued ſlope to the top of the back wall, there received into proper frame-work; but, for the greater convenience, the lights may be in two tiers or ranges, an under and upper tier, the upper range made to ſlide up and down over the others, but ſo as all the glaſs-work can be moved away occaſionally, to admit the full air to the trees after the work of Forcing; the whole bottom-ſpace within this Frame, muſt be of good loamy earth, or any good garden mould two ſpades deep, which muſt be dug or trenched in the common way, then plant a range of trees within five or ſix inches of the wall, and two or three yards aſunder, erecting a trellis behind them, upon which, to train the branches as againſt a wall or eſpalier; beſides theſe trees, there may be other inferior plants ſet in the border in front of the trees, as ſtrawberries, dwarf kidney-beans, dwarf peas, mazagan beans, &c. dwarf roſes, or the like, that will not riſe high enough to ſhade the fruit-trees in the back range.

A Frame of this conſtruction, forty or fifty feet long, may be worked by one fire; but if longer, two furnaces for fires will be requiſite. For flues, &c. ſee HOT-HOUSE.

But to have a more capacious Frame both for trained trees and ſtandards, may be of any length from twenty to fifty feet or more, but muſt be ten or fifteen feet wide, having an upright back wall of brick ten feet high, with flues as above directed, and a low wall in front a foot high, on which is erected upright glaſs-work, four or five feet perpendicular, and from the top of theſe, a ſloping roof of glaſs frames, continued to the top of the back wall, ſupported upon proper bearers three feet ſix inches diſtance, having the top glaſſes in two ranges, an under and upper range, as before adviſed, both of which, and thoſe of the upright in front, made to ſlide, and move away occaſionally; in this Frame there will be room to walk under the glaſs-work in any part, and there will be alſo due room for the trees, both dwarfs and ſtandards, and then having the whole ground-

ſpace

ſpace withinſide of pliable loamy earth, as in the other Frame; you may plant your trees ſome in one range againſt the back wall, as peaches, nectarines, apricots, grapes, figs, &c. eight feet aſunder, erecting a trellis for training them upon; and in front of theſe may be planted rows of young cherries, both full ſtandards, half ſtandards, and dwarfs, the full ſtandards to have five or ſix feet ſtems, the half ſtandards three or four, and the dwarfs one or two foot ſtems; each ſort, both trained trees and ſtandards to be planted when about from three to four or five years old, as ſoon as they acquire a bearing ſtate, having regular heads of two or three feet extent at firſt planting. Having procured the trees, and the ground ready for their reception, may then plant one range of the choicer ſorts as before noticed, againſt the back wall, two or three yards aſunder, the others in rows from back to front, at eight feet diſtance, the talleſt behind and the loweſt in front, at three or four feet diſtance in each row, making each row range againſt the intervals of the trained trees behind; or if they are all full and half ſtandards, there will be more room for ſeveral ſorts of ſmaller plants under them; and as their branches will be nearer the top glaſſes, may be of particular advantage, and in the intervals may be planted ſome low currants, gooſeberries, raſberries, ſtrawberries, dwarf-beans, kidney-beans, &c. But in a frame of this dimenſions, ſome plant it entirely with ſtandards, more particularly cherries, as being more moderate ſhooters and ſooneſt arrive to a bearing ſtate, ſo as to bear any tolerable quantity of fruit to defray the expence, planting them five or ſix feet diſtance, ſometimes ſtandard plums, apricots, peaches, and nectarines are alſo planted.

A Frame of theſe dimenſions, twenty-five feet long may be worked by one fire; but if much more than thirty feet in length, two furnaces for fires, with each, its ſet of flues, will be neceſſary.

With reſpect to the age of the trees, for both the above kinds of fire heat Forcing Frames, they ſhould be from three to four or five year old, with regular heads of two or three feet extent each way, and juſt arrived at a tolerable bearing ſtate; no very vigorous ſhooters muſt be admitted, but ſuch only that aſſume a moderate regular growth, and are to be trained in the nurſery until they have acquired a proper ſize, each as directed under their reſpective genera, whether as wall trees or ſtandards, or trees proper for the purpoſe may be had at all the public nurſeries: they are to be tranſplanted into the Frame in October or November to remain for Forcing; but ſhould be permitted to have a year or two's growth here before you begin Forcing them, that they may be firmly rooted, during which time all the glaſſes ſhould be entirely away, that the trees may have the full air till Forcing time is nearly arrived.

In both the above kinds of Forcing Frames, may alſo plant ſome grape-vines on the outſide of the front glaſſes in the full ground, and their ſtems trained through holes, and conduct the ſhoots along up the inſide towards the glaſs-work to a ſort of ſlight trellis; keeping the branches quite thin, and they will ripen early fruit in great perfection.

It ſhould however be remarked with reſpect to grapes, that when intended to have in your Forcing Frame any of the large late kinds, which do not ripen here, without the aid of ſhelter and artificial heat, it will be more adviſeable to have them in a department by themſelves, becauſe they often do not ripen till late in autumn, ſo often require the glaſſes to be continued over them occaſionally all ſummer, eſpecially in wet and cold weather; and ſometimes, if the autumn proves wet and cold, they require aid again of gentle fires made them on nights, to promote their ripening perfectly; in which caſes, were other trees, whoſe fruit are ripe and gone in ſummer, planted in the ſame department, it would force them at an untimely ſeaſon, and greatly weaken them.

The ſeaſon for beginning to make the fires for forcing the trees, in either of the above deſcribed fire-heat frames, is any time in January, though about the middle, or towards the latter end of that month is, for the general part, rather the moſt ſucceſsful time to begin the general forcing, to have a good crop; for if the trees are forced very early, there will be ſome danger of their miſcarrying, as if they ſhould come into bloſſom, when ſevere weather prevails, that air cannot be freely admitted, they ſeldom ſet any tolerable crop of fruit; therefore, by beginning to make the fires about the time above directed, the trees will be in bloſſom about the middle of February, when we may expect ſome fine ſunny days for the admiſſion of a moderate portion of freſh air, which is eſſentially neceſſary to promote the natural impregnation of the fruit, and improve its free growth,

growth, for if kept too close, they are apt to drop off in their infant ſtate.

The fires are to be lighted in the furnace every evening about four or five o'clock, and if kept burning till twelve, it will ſufficiently heat the flues to warm the internal air of the houſe till next day in the evening, unleſs very cold, froſty, or cloudy damp weather ſet in, then a moderate fire may be made occaſionally alſo in a morning, but by no means force the trees too much, for a moderate warmth will prove the moſt ſucceſsful; and thus continue the fires occaſionally till April or May, but leſs in proportion as the weather grows warmer.

Freſh air muſt be occaſionally admitted in fine days, by ſliding ſome of the glaſſes a little open, and, as the trees advance to bloſſom and fruit, the days grow longer, and the power of the ſun greater, allow a greater proportion of air accordingly.

Thus your trees will be in full bloſſom in February, and ſome ſorts will ripen fruit in April, particularly cherries and ſtrawberries in plenty; you may alſo expect early apricots, peaches, and nectarines in May and June, plums and grapes in June and July, but the curious large late ſorts of grapes, which do not ripen here without ſhelter and artificial heat, will not be ripe till September; but theſe ſhould always have a ſeparate department.

After the fruit of the different ſorts are all gathered, the glaſſes ſhould be taken entirely away, that the trees may have the full air during ſummer, and in December they ſhould be placed upon the Frame again, ready for forcing in January.

With reſpect to pruning, the trained trees, i.e. ſuch that are trained as wall-trees againſt the trellis, &c. they are to be pruned and trained, every ſummer and autumn, each ſort according to its kind, as other wall-trees, and as directed under all their reſpective articles; and as to the ſtandards, their requiſite pruning is principally in autumn, to cut out any irregular growth, and thinning out any crowding ſhoots, for the branches muſt be kept thin and regular, clear of each other, ſix or eight inches diſtance; and any ſtragglers which extend in length conſiderably more than its neighbour of the ſame tree, ſhould be reduced to order; and as the branches in general become ſo long, as to preſs againſt the glaſſes, or ſpread too much, they ſhould alſo be reduced a little, to preſerve them within due compaſs, obſerving always when ſhortening the ſtandards, it is neceſſary to cut to a bud, ſituated on the outſide of the ſhoot or branch, making the cut on the inſide; but for particulars in pruning, both the trained trees and ſtandards, ſee their reſpective genera.

Every autumn, after pruning the trees, the borders muſt be digged carefully one ſpade deep.

It muſt be remarked, that the trees in theſe Frames, if annually forced, are not ſo durable, nor plentiful bearers as thoſe in the full air; therefore, when you ſhall ſee any become weak, ſickly, or bad bearers, others ſhould be ready in training, or procured from the nurſeries, to plant in their ſtead, and in this no time ſhould be loſt.

But to continue the ſame trees more effectually in health, and in a bearing ſtate, ſome have a double portion of walling and framing planted, but more particularly that of the firſt deſcribed fire-heat Frame, which is ſometimes contrived to move or ſlide along from one place to another, for one Frame-work and glaſſes to ſerve two portions of walling, ſo that being alternately worked, one part one year, the other the year after, each portion of trees will have a year of reſt in their natural growth, and will ſucceed each other in due order for forcing, whereby the health and vigour of the trees will be better ſupported, and each year a greater crop of fruit may be expected, than if the ſame trees were ſucceſſively forced every year.

FOREST TREES, ſuch large trees both deciduous and ever-greens, that grow in woods and foreſts, either naturally or cultivated, and arrive to timber, and whoſe wood is proper for any œconomical purpoſes.

Of the Foreſt Tree kind there are twenty or thirty different ſorts of deciduous and ever-greens, which may be employed as ſuch, ſome to grow to large timber for building, others to compoſe coppices of underwood, to fell every ten, fifteen, or twenty years for various ſmaller purpoſes, in huſbandry, building, and many other trades, as exhibited in the culture of the reſpective ſorts, each under its proper genus; but we have collected under this head a liſt of all the ſorts that may be employed in forming woods and other profitable plantations as timber trees, by which any one may ſee at once the ſorts proper for ſuch purpoſes; and all of which here exhibited are very hardy, and eaſily raiſed in the open ground, moſtly by ſeeds, and ſome by layers and

and cuttings; and all of them ſucceed in any open expoſure; and as in the compaſs of an eſtate, the ſituations and ſoils may be very variable, ſome parts may be mountainous, others low, ſome boggy, ſome light and ſandy, and others loamy, or of a ſtiff clayey nature, it will be eaſy to ſuit any ſort according to the ſoil in which they ſucceed beſt, which is always mentioned in their culture; and as ſuch plantations are in general great ornaments as well as improvements to eſtates, no ground, however barren or unfavourably ſituated, need lie waſte, ſince there are trees will ſuit all ſorts, and of eaſy culture; obſerving however, we only give the liſts here, of the proper ſorts, and as to their general culture, ſee each reſpective genera.

We ſhall exhibit them under two heads, viz. deciduous and ever-green kinds.

*Deciduous kinds.*

ACER, the *Maple-tree*—common-maple, greater-maple, or ſycamore-tree—Norway-maple—aſh-leafed maple.

ÆSCULUS, *Horſe-cheſtnut*—common horſe-cheſtnut.

BETULA, the *Birch-tree*—common birch-tree—*betula alnus*, or alder-tree.

CARPINUS, *Horn-beam*—common horn-beam—flowering horn-beam.

CELTIS, *Nettle-tree*—common black-fruited nettle-tree—purple-fruited nettle-tree.

CORYLUS, *Hazle-nut-tree*—common hazle-tree.

CRATÆGUS, *Wild Service-tree*—maple-leafed ſervice-tree.

FAGUS, *Beech tree*—common beech-tree—*fagus caſtanea*, or Spaniſh cheſtnut-tree.

FRAXINUS, *Aſh-tree*—common aſh-tree.

JUGLANS, *Walnut tree*—common walnut-tree—black Virginia walnut-tree.

PINUS, *Pine-tree*—*pinus larix*, or larch-tree.

PLATANUS, *Plane-tree*—oriental plane-tree—occidental plane-tree—black Spaniſh plane tree.

POPULUS, *Poplar-tree*—white poplar, or abele-tree—black poplar—trembling poplar, or aſpen-tree.

PRUNUS, *Plum-tree*, including the *prunus ceraſus*, or cherry-tree—wild black-cherry-tree—wild red-cherry tree—*prunus padus*, or bird cherry-tree.

QUERCUS, *Oak-tree*—common Engliſh oak—willow-leafed oak—cheſtnut-leafed oak.

SALIX, *Willow-tree*—common white willow—red willow—broad-leafed ſweet-ſcented willow—yellow cultivated willow—pendulous, or weeping-willow—ſallow, or oval rough-leafed willow—oſier, or long-ſhooting willow, and ſeveral others. See SALIX.

SORBUS, *Service-tree, Mountain-aſh*—common mountain-aſh, or wild *ſorbus*—ſweet or eatable ſervice-tree.

TILIA, *Lime or Linden-tree*—common green-twigged lime-tree—red-twigged lime-tree.

ULMUS, *Elm-tree*—common upright Engliſh elm—broad-leafed wych-elm—narrow-leafed wych-elm—Corniſh ſmall-leafed elm. See ULMUS.

*Ever-green kinds.*

BUXUS, *Box-tree*—common broad-leafed tree box—narrow-leafed tree box.

CUPRESSUS, *Cypreſs-tree*—ſpreading-cypreſs.

ILEX *Holly-tree*—common green holly.

JUNIPERUS, *Juniper-tree*—red Virginia cedar.

LAURUS, *Bay-tree*—common bay-tree, and varieties.

PRUNUS, *Plum-tree*—*prunus lauro-ceraſus*, cherry-bay or laurel-tree.

PINUS, *Pine* and *Fir-tree*—wild pine, commonly called Scotch fir—pineaſter, or great wild pine—ſtone-pine—ſwamp-pine—Weymouth-pine—ſpruce fir tree—ſilver fir-tree, and cedar of Lebanon.

QUERCUS, *Oak-tree*—ever-green oak—cork-tree.

TAXUS, *Yew-tree.*

THUYA, the tree of life, or *arbor vitæ*—common *arbor vitæ.*

Of the above liſt of foreſt trees, the principal and moſt valuable ſorts here as timber, are, the oak, elm, beech and cheſtnut, aſh, maples, birch and alder, poplar, plane-tree, larch, and the pine and fir-trees; but, as moſt of the other ſorts will grow in any expoſure, they might be introduced among the others here and there. In compoſing woods and other plantations for profit, they will aſſiſt both in beautifying the eſtate, and encreaſe the value, as they become fit for the ſeveral uſes for which they are calculated; ſome to ſtand for timber, others for underwood, among the reſt the willow and hazel ſhould not be omitted, they will grow any where, and will yield no inconſiderable profit; but the oak, elm, aſh, and beech are the moſt valuable of all timber-trees in this country.

Moſt

Moſt of the above ſorts are eaſily raiſed from ſeed in any common ground in the nurſery, ſome alſo by layers, others principally by cuttings, as alder, poplar, willow, and laurel.

The ſeed may be ſown in autumn, in October, or November, and ſome in ſpring, as mentioned under their reſpective articles; though all the ſorts, if the ſeeds are properly ſecured till February, may then be ſowed with good ſucceſs; when the plants are two years old, plant them either where they are to remain, or in nurſery rows, to ſtand until they are three or four feet high or more, and may then be tranſplanted for good in autumn or winter into the places where they are to remain to form a wood, &c. obſerving, it is adviſeable to have the deciduous and ever-green kinds principally in ſeparate plantations; and that if deſigned to have underwood, for falling occaſionally between the trees allotted to ſtand for timber, the deciduous kinds are chiefly to be uſed for this purpoſe; becauſe the ſtools of each falling in moſt ſorts, ſhoot forth again much freer than ever-greens; they may therefore be planted at four or five feet diſtance, and after eight or ten years growth, they will be ready to thin for the firſt falling: ever-green kinds in different plantations may alſo be planted at the ſame diſtance, and as they advance in growth, as above, may be thinned out alſo as underwood, being careful in the thinning of both kinds, deciduous and ever-greens, to leave enough of the moſt promiſing plants to grow up to timber.

But where, in a large extent of ground intended for plantations, to ſave expence in planting, the ſeeds are ſometimes ſowed at once, where the trees are to remain, to compoſe the woods, having the ground prepared by proper ploughing; drills are drawn two, three, or four inches deep, and three or four feet aſunder, the ſeeds are ſcattered in the drills, and immediately covered over; then in ſpring and autumn following, great care muſt be exerted to hoe down weeds between the rows as the plants come up.

Another method of expeditious planting is, to raiſe the young plants in the nurſery, and after two or three years growth in the ſeed-bed, plant them out in rows, a yard or four feet aſunder, and two feet diſtance in the rows.

In all large plantations there ſhould be left ſpacious opens for ridings, to different parts of the wood, as well as to admit a larger circulation of air to the trees.

In theſe plantations, by either method, great attention is requiſite to keep up good fences, and deſtroy large weeds, by hoeing, &c. till the trees are advanced in growth, and almoſt ready for the firſt fall or thinning.

The firſt fall or thinning for underwood, muſt be determined by the ſize, intended uſes, and demand for the materials; as for example, if for poles or ſuch like purpoſes, or for faggot wood, &c. they will probably be ready in ſeven, eight, or ten years, when part may be then cut down; another part the following year, ſo go on annually, till the whole plantation is cut, by which time the firſt fall will be grown up and ready to cut again, eſpecially of the deciduous kinds; obſerving at each fall, to leave the moſt vigorous and thriving trees for timber, which may be left pretty cloſe at firſt, and thinned as they encreaſe in bulk, leaving at leaſt a full crop to grow to large timber trees, ſtill preſerving the ſtools between them to cut occaſionally for underwood, every ſeven, ten, fifteen, or twenty years, according to the demand or purpoſes for which they are intended.

It ſhould be remarked, if intended to plant any boggy or marſhy grounds, that alder, poplar, and willow, are the proper ſorts which will grow very faſt either by ſmall cuttings, or by large truncheons; elder will alſo grow freely this way.

FOSSE, a ſort of ha ha, or ſunk fence, ditch-like, five or ſix feet deep, and ten, twenty, or more wide, formed at the termination of particular parts of pleaſure-grounds, parks, &c. to extend the proſpect.

Theſe kind of fences are often formed at the termination of ſpacious lawns, grand walks, avenues, and other principal parts of pleaſure gardens and parks, both to extend the proſpect into the adjacent fields and country, and give the particular parts of a garden an air of larger extent than it really has, as at a diſtance nothing of the fence is ſeen, ſo that the adjacent park, fields, &c. appear to be connected with the garden.

When a pleaſure-ground is ſituated in a park, or paddock, or adjoins to one, or any ſpacious field, open to any agreeable proſpects, the Foſſe is often continued quite round, as far as the proſpect is agreeable, either to the adjacent fields, plantation, water, or any other object appearing to view from the walks of the garden.

These Foſſes are formed upon two different plans, both however ſerving the purpoſe of a fence, and to render the proſpect open and airy.

One ſort is formed with an upright ſide next the garden, five, ſix, or ſeven feet deep, faced with a wall of brick, ſtone, or ſtrong poſt and planking; the other ſide is made ſloping outward from the bottom of the upright wall, &c. gradually with an eaſy ſlope to fifteen or twenty feet diſtance, or if more the better, ſo as to render the declivity as eaſy and imperceptible as poſſible, to take off all ſtiff and ditch-like appearance; and that if in a field or park, no ground will be loſt, as it may be converted into graſs, obſerving, that the top of the upright ſide ſhould be nearly upon a level with the adjacent ground of the garden, and always a little higher than the top of the ſlope on the oppoſite ſide, and which ſhould be laid with graſs correſponding to the adjoining garden-ground, unleſs it is thought convenient to continue a gravel walk that way; in which caſe, always preſerve a proper verge of graſs between the walk and the edge of the Foſſe; the ſloped ſide ſhould alſo have its top always on a level with the adjacent ground of the field, park, or part where it is formed; and that the ſide being finiſhed with a regular ſlope from top to bottom, it ſhould alſo be ſowed or laid down in graſs, which will preſerve the ſlope always in due form, and at all times appear decent and agreeable to the ſight.

In forming this kind of Foſſe, if, by reaſon of wet you cannot go deep enough to form the upright ſufficiently fencible againſt men and beaſts, a *cheveaux de frize* of woodwork may be erected along the top, projecting outward in a nearly horizontal poſition, or as much ſo as to riſe but very little above the level of the top of the perpendicular ſide on which it is fixed, that it may not obſtruct the view, or be very perceptible from the garden.

The next ſort of Foſſe is formed with both ſides ſloping, and in perpendicular depth from four to ſix or ſeven feet, having a fence near that height arranged along the bottom; the ſides may be ſloped gradually from the bottom, to twenty, or thirty feet width, or more at top, for the more eaſy and imperceptible the ſlope the better, but more particularly on the field ſide, for the reaſons before given, and the ſides to be alſo ſowed or layed with graſs. In this kind of Foſſe, as both ſides being ſloped, conſequently a fence along the bottom is neceſſary as a defence againſt cattle, &c. which may be either ſtrong paling, or any kind of palliſado-work, the height in proportion to the perpendicular depth of the Foſſe, for the top ſhould not be higher than that of ſlopes.

The method of forming both theſe kinds of fences is as follow:

If it be deſigned to have the firſt deſcribed Foſſe, i. e. one ſide perpendicular, the other ſloping, proceed thus: ſet out the intended width by two ranges of ſhort ſtakes, then level in the ſtakes by notching, according to the intended height of the top on each ſide, corroſponding with the adjacent ground as aforeſaid; and then make up both the top lines with earth firmly, according to the line of level marked on the ſtakes; this done, then cloſe along the ſide of the line of the intended upright ſide, proceed to dig a trench three feet wide, perpendicularly to the intended depth of the Foſſe; as you go on, work alſo the ſloping ſide gradually down, ſtill continue digging the trench perpendicularly next the garden, &c. till arrived at the proper depth; then level the bottom equally along according to the lines of level at top, and having proceeded ſo far, then, according to the line of level at top and bottom, trim and finiſh off the ſloping ſide regularly, ſo as to form an even ſlope from the outſide line at top, to that at bottom: as to the upright ſide, a wall muſt be erected to the height of the line of level at top; making good the ground behind the wall, firmly, as the building advances, and finiſh the top with a coat of turf level with the adjoining ground; at the ſame time finiſh alſo the ſlope, either by ſowing it with graſs-ſeed, or laying it with turf as ſhall be moſt convenient.

To form the other ſort of Foſſe, with both ſides ſloping: ſet out the width by two lines of ſtakes, level them in, and make up the ground of each line according to the mark of level, as directed before in the former; then exactly along the middle, between the two lines of ſtakes, dig a trench two or three feet wide, to the intended depth of the fence, ſloping each ſide a little as you go on, ſtill continuing the trench perpendicularly, till arrived at the due depth; then, as in the former, level the bottom an equal depth, by ſtakes agreeable to the lines of level at top: when this is effected, finiſh off both ſlopes evenly from each line of level at top, to that at bottom, and ſow each ſlope with graſs or turf

turf as you ſhall think proper; and with reſpect to the fence along the bottom, it may be either cloſe paling, rails, or paliſadoes, as is moſt convenient, the height proportionable to the depth of the Foſſe, but not to be higher, or at leaſt but very little above the line of level at top of the Foſſe.

FRAGARIA, the ſtrawberry plant.

The plants are low, herbaceous, hardy perennials, growing in large leafy tufts, cloſe to the ground, producing ſlender annual ſtalks a few inches high, crowned by many beautiful fruit of admirable fragrance; hence it derives the general title *Fragaria*.

Claſs and order, *Icoſandria Polygynia*.

*Characters.*] CALIX is monophyllous, plane, and ten-parted at top. COROLLA, five roundiſh ſpreading petals, attached to the calix. STAMINA, twenty ſhort awl-ſhaped filaments, and moon ſhaped antheræ. PISTILLUM, numerous germina, collected into a head, and many ſtyles, having ſimple ſtigmas. PERICARPIUM, none, but a roundiſh large ſoft receptacle, or fruit, having numerous ſmall ſharp-pointed ſeeds ſcattered over its ſuperficies.

There is but one real ſpecies of the common ſtrawberry, which is comprehenſive in many varieties of its fruit.

The ſpecies are;

1 FRAGARIA *Veſca*.

*The cultivated Strawberry.*] Fragaria, with a thick fibrey root, crowned by a large cluſter of oval-lobed leaves, many trailing ſtrings or runners rooting and forming plants at every joint; and amidſt the leaves ſeveral ſlender flower-ſtalks, ſix or eight inches high, crowned by a cluſter of ſmall white flowers, ſucceeded by large roundiſh berries of different ſizes and colours in the varieties.

The principal *Varieties* are:

*Wood Strawberry (Sylveſtris.)* Having oval ſawed-leaves and ſmall round fruit, and of which there are—red-fruited wood-ſtrawberry—white wood-ſtrawberry—greeniſh pine-apple taſted wood-ſtrawberry—double-bloſſomed wood-ſtrawberry—and with gold ſtriped-leaves—ſilver-ſtriped leaves.

*Scarlet, or Virginia Strawberry (Virginiana.)* Having oblong, oval, ſawed-leaves, hoaryiſh underneath, and a roundiſh ſcarlet fruit; and of which there are—common ſcarlet ſtrawberry—roundiſh-leafed large ſcarlet-ſtrawberry—ſtriped-leafed ſcarlet-ſtrawberry.

*Hautboy, or Muſky Strawberry (Moſchata.)* Having oval-lanceolate, rough leaves, and large, pale, red fruit; of which there are—oval fruited hautboy-ſtrawberry—globular-fruited hautboy—pine-ſhaped hautboy—green-fruited hautboy—red-bloſſomed hautboy—white-ſtriped-leafed hautboy—yellow-ſtriped-leafed hautboy.

*Chili Strawberry (Chiloenſis.)* Having large oval, thick, hairy leaves, large flowers, and very large firm fruit; of which there are—round, pale-red Chili ſtrawberry—oblong, pale-red Chili ſtrawberry—round, ſcarlet Carolina ſtrawberry—white Chili ſtrawberry. Theſe Chili ſtrawberries were firſt introduced into Europe from Chili, in America; they are conſiderably the largeſt fruit of all the ſtrawberry kind, though not always good bearers, but I have ſometimes had them bear wonderful great crops, even ſuperior to the ſcarlet kind; and for the ſingularity of their large beautiful fruit, ſhould never be omitted in the ſtrawberry collection.

*Alpine, or Monthly Strawberry (Alpina.)* Having ſmall oval leaves, ſmall flowers, and moderate-ſized, oblong, pointed fruit, of which there are—ſcarlet Alpine ſtrawberry—red Alpine ſtrawberry—white Alpine ſtrawberry. Theſe varieties grow naturally on the Alps; they poſſeſs this ſingular property more than the other ſorts, that all the young plants, formed every ſummer, upon their runners, ſhoot up into flower and fruit the ſame year, whereby a freſh crop of fruit is continued monthly in the old and new plants, from June until November or December; the plants are always great bearers, and proſper any where, and the fruit is of a fine poignant agreeable flavour.

All the above varieties of *Fragaria* are hardy low perennials, durable in root, but the leaves and fruit-ſtalks are renewed annually in ſpring; ſhooting up to flower in May and June, and their fruit arrive to perfection in June, July, and Auguſt, and which in the Alpine kind as aforeſaid, continue till the beginning of winter. They all proſper in any common garden ſoil, producing abundant crops annually, without much trouble, and encreaſe exceedingly every ſummer, both by off-ſets or ſuckers from the ſides of the plants, and by the runners or ſtrings, all of which rooting and forming plants at every joint, each of which, of either ſort, ſeparately planted, becomes a good plant the ſame year, and produces a few fruit the year following, but bear in great perfection the ſecond ſummer; tho' young plants of the Alpine ſtrawberry, planted

out ſoon after they are formed, bear fruit the ſame ſeaſon, as will alſo the runners of them; for this ſort is the moſt prolific of all the varieties of *Fragaria* yet known, as not only its runners form plants at all the joints as they go on like the other ſorts, but the ſame young plants, as before obſerved, ſhoot up into flower and fruit, and the fruit alſo attains good perfection the ſame ſeaſon; which in all the other ſorts, the young plants rarely produce fruit until they are one year old, and ſometimes not till they have two years growth.

All the ſorts are commonly cultivated in kitchen-gardens, in beds or borders of common earth, in rows length ways, fifteen or eighteen inches diſtance; the plants the ſame diſtance from one another in each row.

Patches of the different ſorts diſpoſed here and there in the fronts of the different compartments of the pleaſure-ground, will appear ornamental both in their flowers and fruit, and effect an agreeable variety.

A plantation of ſtrawberries will endure ſeveral years, obſerving however, that the plants are always in the greateſt perfection of bearing in the ſecond, third, or fourth years; therefore, to have plentiful crops of large handſome fruit, a freſh plantation ſhould be made every third or fourth year, for altho' the plants may continue healthful and ſtrong much longer, and flower abundantly, yet moſt of them are apt to become ſterile, i. e. produce flowers deficient in ſome of their generative parts, particularly the *piſtillum*, or female organs either in whole or part, in which caſe they produce none, or at beſt, but very ſmall irregular fruit; and young plants taken from ſuch for propagation, retain the ſame degree of ſterility of the parent.

The flowers of all the varieties of ſtrawberries have each five ſmall roundiſh petals, and are hermaphrodite, and not male and female in different plants, as advanced by the author of the Univerſal Botaniſt; for as both the male and female organs are contained in the ſame flower upon the ſame plant, they muſt conſequently be hermaphrodite, and the claſs and order determine it: *Icoſandria Polygynia*, twenty ſtamina and many ſtyles.

The earlieſt ſorts are the ſcarlet Alpine, and the white and red wood varieties; the hautboys next, and the Chili laſt of all, but they all attain perfection in June and July.

But they may alſo be obtained at a much earlier ſeaſon by aid of artificial heat, even in winter and ſpring: ſee their culture in HOT HOUSE, &c.

*Propagation.*

The propagation of ſtrawberries may be effected by ſeed, particularly to obtain new varieties; but the common method of propagation is by young plants which all the ſorts furniſh abundantly, both by off-ſets from their ſides, and runners or ſtrings, which, rooting as they go on, form plants at each joint, and thoſe, both of the off-ſets and runners, become proper plants the ſame year, fit for forming a new plantation the following autumn, always making choice of thoſe young plants near the old root.

The ſeaſon for this work is any time in autumn, Auguſt, September, or October, but the ſooner the better, or if omitted in autumn, it may be done in ſpring, but I greatly prefer an early autumn planting, for the plants will be much ſtronger and better prepared to produce a few fruit the following year, which is rarely the caſe with the ſpring-made plantation; but to have a ſupply of as good plants as poſſible, it is proper in June, July, or beginning of Auguſt, to take off a quantity of the firſt formed young plants, particularly thoſe formed neareſt the parent, raiſing them up carefully with fibres, and trim off all the ſtrings or running part, then plant them in a ſhady border by way of nurſery, ſix inches apart, give a good watering and repeat it often in dry weather, and by September or October they will be ſtrong and in much finer order for planting out for good, then thoſe that remain till that time in the beds. If you however ſhould omit the above method, I would adviſe, if poſſible, in Auguſt or September to take opportunity of ſhowery weather, and make a plantation at once in the places where they are to remain; but by no means be later than October, otherwiſe the plants will not take root ſufficiently before winter, and will be liable ſome to be thrown out, others forced into the ground during that ſeaſon, by the weather and vermin; and at any rate will be ſo weakly in ſpring, as not to produce any fruit the enſuing ſummer. As to a ſpring plantation, it may be performed, if thought convenient, when omitted in autumn, but the plants will ſcarce produce fruit that year; they however will have the ſummer before them to acquire ſtrength before winter, ſo as to be able to produce ſome fruit the next ſeaſon.

In

In the choice of the plants for making your plantation, by no means take them from very old beds, but ſuch that are in the ſecond or third year of their bearing, and that are remarkable for bearing plentifully, becauſe, as before noticed, ſome plants may appear very healthful, and flower ſtrong, yet produce but very little fruit, occaſioned by moſt of the flowers being deprived of the female organs, for they frequently have numerous ſtamina and no ſtyle; obſerve likewiſe, in taking off the young plants, that of ſuch off-ſets or ſuckers you may take immediately from the ſides of old plants, to chuſe thoſe ſituated quite on the outſide; and that are only of one ſummer's growth, rejecting ſuch that have knobby hard roots; and of plants produced from the runners, chuſe principally thoſe robuſt ones, which grow next the parent plant, thoſe at a diſtance toward the extreme part of the runner are not near ſo proper; being careful to raiſe them up with as much root as poſſible, trim off all ſtringy parts, broken leaves, and ſtraggling fibres, and they are ready for planting.

A free ſituation open to the full ſun is rather neceſſary for theſe plants, principally to give the fruit flavour; though, for the ſake of continuing a longer ſucceſſion, ſome of the wood, ſcarlet, and Alpine kinds may be planted in different expoſure to have more or leſs ſun.

With reſpect to ſoil and its preparation, all the ſorts will ſucceed in any common garden earth, as before obſerved; but if it is inclinable to a loamy nature, it will be a particular advantage; however, be in no great anxiety about ſoil, take what your garden affords, and if very poor, add ſome rotten dung, and dig the whole one ſpade deep; then form the ground into beds four feet wide with two feet wide alleys between bed and bed, for the convenience of having always ſufficient room to go in to hoe, dig, weed, water, and gather the fruit; but do not form the alleys deep, only juſt tread them out by line, then rake the beds over, and line the edges ſtraight; or you may prepare borders by the ſides of walks for the reception of ſome of each ſort, where they will be both profitable and ornamental.

Having the ground and plants ready, then proceed to plant them by line and dibble, in rows lengthways, the bed or border fifteen inches diſtance for the wood, eighteen for the ſcarlet hautboys and Chili kinds; I would alſo adviſe the rows of Alpine ſtrawberries to be a foot and a half diſtance, for although the plants are of more humble growth than the three laſt mentioned, yet, as they ſend forth many runners, and as theſe are prolific the ſame ſeaſon, let them have room, that their runners may have full ſcope to root and fruit as they advance; and thus by allowing all the ſorts room, you will find your account in the ſize, quantity, and quality of the fruit; and to give them ſtill greater ſcope, let each ſort be planted in the quincunx order.

As ſoon as planted, let them all have a plentiful watering, to ſettle the earth cloſe about the roots, which repeat occaſionally in dry weather for a week or two, till they have taken good root.

*General Culture.*

Having thus formed your ſtrawberry plantation, we proceed to give direction for their future culture.

The firſt ſeaſon of planting requires nothing material to be done till ſpring, more than lightly hoeing between the plants to deſtroy any autumnal weeds, they requiring no covering in winter; and in ſpring, in February, or March, when weeds ariſe, go over all the ground with a hoe, both to cut up all weeds, and to looſen the ſurface about the plants; and as in April, May, and June, and during the ſummer, all the ſorts encreaſe conſiderably by off-ſets, as alſo by their numerous ſtrings or runners, advancing a conſiderable diſtance, rooting and forming plants at every joint, ſo as to overſpread the ground, and greatly croud the principal plants if not diſplaced; therefore, according as theſe runners are produced, it would be of particular advantage to diveſt the plants of the groſſeſt of them, which will greatly ſtrengthen the crop, and promote fruitfulneſs both in quantity and ſize; let them however, at any rate be cleared from all runners in autumn, cutting them away cloſe to the plants; clear off alſo all weeds, and then they will remain clean and decent until the return of ſpring again, when the work of hoeing the beds and ſtringing the plants muſt be occaſionally repeated during ſummer and autumn; which operation ſhould be performed every year, and if in every autumn after the firſt, the alleys are dug, and ſome earth ſpread between the plants, it will prove very benficial, as directed below.

The ſecond year of their growth you may expect a general bloſſom and full crop of fruit.

Every

Every ſummer, when the plants are in bloſſom, if the weather ſhould then prove dry, good watering is abſolutely neceſſary, which ſhould be continued plentifully every day or two, from the firſt appearance of the bloſſom till the fruit is ſet and advanced conſiderably in growth; otherwiſe the bloſſom, though abundant, will drop without ſetting half a crop of fruit, and that which ſtands will not attain its due ſize; but if a moiſt ſeaſon happen at the above period, watering is unneceſſary, and a plentiful crop always ſucceeds.

The ripening of the fruit advances gradually in June, July, and Auguſt, continuing in ſucceſſion in different ſorts, ſix weeks or two months, though in the Alpine kinds, is often continued from June till the beginning of winter.

In gathering the fruit, let it always be taken with about an inch of its ſtalk, pinching it off, and put it in ſmall baſkets, not in too great quantities, leſt they bruiſe one another.

When they are to be ſent to market, they ſhould be packed in pottles, i.e. long, upright, narrow chip baſkets, holding about a quart or three pints, having a bow-handle at top, and each when filled, ſhould be papered over, and tied down with baſs; then many of theſe pottles ſhould be packed upright in a large flat boat-baſket, and ſent to market on men's head, that they may go ſafe without bruiſing, as is the practice of the London gardeners, ſome of whom have ſeveral acres of ground entirely ſtrawberries, particularly thoſe in the neighbourhood of Hammerſmith and Brentford.

As the plants being now arrived at a full bearing ſtate, here follows ſome general hints concerning their annual culture. Every ſpring, in February, or March, provided the plants have been ſtringed the preceding ſummer and autumn, to preſerve them in diſtinct bunches, it will prove very beneficial to looſen the earth, by fork-digging lightly, between the rows, being careful to break the lumps, and preſerve an even ſurface; as the ſummer advances, hoe down weeds according as they appear; and as many runners will always riſe from the plants, it will ſtill be of advantage, when opportunity ſuits, to clear them conſtantly off all the fore-part of ſummer, until the fruit has obtained its growth, except the Alpine kinds, which, as formerly obſerved, produce fruit the ſame year, as well as the old plants, ſo that a due quantity of runners ſhould be retained to each plant to furniſh a greater ſucceſſion of fruit during the ſeaſon; likewiſe of the other ſorts, when intended to have a ſupply of young plants for a future plantation in autumn, ſome of the beſt runners ſhould be reſerved to form plants for that purpoſe. In autumn, after the fruit is gone, give the beds a general dreſſing, that is, mow or cut down the old leaves, and rake them off, then with a knife or ſharp hoe trim off all the remaining runners from each plant, cutting up alſo all thoſe between them, and all weeds, and draw the rubbiſh into the alleys, and thus you will form all the plants into diſtinct bunches; then line out and dig the alleys, burying the rubbiſh in the bottom, and ſpread a little of the earth between the bunches of plants, which will exhibit an air of neatneſs, as well as prove a very beneficial dreſſing, and no farther care is neceſſary till ſpring; when the work before directed in ſpring and ſummer may be again repeated, the ſame alſo again in autumn, and ſo proceed annually.

Obſerve however, that if the work of ſtringing the ſtrawberry-beds as above in ſummer and autumn, ſhould be omitted at theſe ſeaſons, do not fail to do it effectually in ſpring, in February or March, as above directed in the autumn dreſſing, digging the alleys and earthing between the plants in the ſame manner.

Many perſons however never beſtow much culture on their ſtrawberries, but ſuffer their runners to ſpread about, and remain from year to year, covering the whole ground, and form apparently a perfect ſward; but the fruit of ſuch plants will be very inconſiderable, both in reſpect to ſize and quality, in compariſon to thoſe regularly dreſſed annually.

Some perſons again direct the beds to be covered every winter with coal-aſhes, caſt-off bark of the ſtoves, leaves of trees, or ſuch like materials, to protect the plants from froſt; but this is intirely unneceſſary, for the plants are generally hardy enough to reſiſt the ſevereſt winter's cold.

*Forcing them in Hot-houſes, &c. for early crops.*

Strawberries may be brought to early perfection by aid of a hot-houſe, forcing-frame, glaſs-caſes againſt hot walls, or in common dung hot-beds under frame and glaſſes, by which ripe fruit may be obtained in January, February, March, or April; the ſcarlet and Alpine,

Alpine, and wood kinds are the moſt eligible for this purpoſe.

For this purpoſe of forcing, you ſhould be furniſhed with one or two-year old plants, that is, young plants of off-ſets or runners before deſcribed, planted into pots or nurſery-beds towards autumn, and ſuffered to take their growth in the open air till the following winter twelve-month: they will then be of proper ſize for forcing; therefore, in autumn, at the times directed for the natural crops, plant out a quantity of ſtout young plants either into nurſery-beds a foot aſunder, or into pots, thirty-twos, and place them in the ſhade till well rooted, which in November plunge to their rims in a warm border under a wall or hedge, to remain until April, then replunge them in a ſhady border for the ſummer, ſupplying them plentifully with water; do not omit this, and pull off all runners and flowers. In September tranſplant them with the balls of earth into larger pots, twenty-fours, to remain to fruit; and thoſe in nurſery-beds, in the open ground may alſo be now be tranſplanted with balls into the ſame ſized pots to remain for fruiting, giving ſtill plenty of water during the dry warm weather; and towards the latter end of October remove them to a warm ſituation, or into a common frame, where they may be occaſionally ſheltered from the inclemency of hard weather till December, January, or February, to prepare them the better for forcing at theſe times.

Having the plants ready as above, then, towards the end of December, or in January, or February, according to the time the fruit is required, place ſome pots of plants into the ſtove or forcing-frame, and either plunge them in the bark-bed, if you would have them as forward as poſſible, otherwiſe place them upon the ſhelves, &c. obſerving always to place them as near the front glaſſes as poſſible, for they rarely ſucceed in the back parts, unleſs placed upon high ſhelves near the top lights.

Their culture here is only regular watering twice or thrice a week, juſt to preſerve the earth moderately moiſt; and you may expect fruit in February and March, or indeed earlier, by beginning to force ſooner accordingly.

If you have the convenience of hot-walls covered with glaſs frames, for forcing fruit-trees, &c. the ſtrawberry plants may in October be turned entirely out of the pots into the border between the trees, a foot aſunder, where they will be firmly rooted by the time for beginning to force the trees, and the ſame fires will do for the whole.

But where there are not the convenience of hot-houſes, &c. the plants may be forced upon dung or tan hot-beds under common hot-bed frames, or in bark-pits, &c.

The hot-beds may be made in January or February, the width and length of the intended frames, and about three feet perpendicular in thickneſs, placing the frames, &c. on, and when the firſt flaſh of great heat is over, put in the plants, previouſly, if dung hot-beds, laying in ſome earth or old tan, in which to plunge the pots, placing them as cloſe together as they can ſtand, filling up cloſely between all the pots, and as ſoon as done put on the lights; every day admit freſh air by tilting the upper ends of the glaſſes an inch or two, being careful to examine the heat; if too powerful, draw up the pots proportionably, to prevent ſcorching their roots; and when the heat is much decreaſed, line the bed, if of dung, as directed for cucumbers, &c. when the plants come into bloſſom they may be moved in their pots to freſh hot-beds, to bring them forwarder, or where this is not convenient, they may be retained in the ſame bed, by ſupporting a proper heat, by lining both ſides occaſionally with ſubſtantial linings of hot dung, covering the glaſſes on nights with mats, ſtill admitting freſh air daily at all opportunities, and give due ſupplies of water; and thus you may have plenty of ſtrawberries towards the end of March and in April.

FRAMES, hot-bed Frames, and other moveable Frames furniſhed with glaſs covers or lights at top, uſed in gardens for protecting and forwarding tender and early plants.

Theſe Frames are formed of inch or inch and quarter deal-board, made about three yards and half long, and one and a half wide, as high again in the back as in front, to give the top a due ſlope to the ſun, and proper declivity to carry off the wet, which muſt be covered with glaſs lights to move on and off occaſionally.

But with reſpect to particular dimenſions, they are different according to the ſorts of plants they are intended to protect; but generally from ten to twelve feet long, four and half wide, and from eighteen inches to three feet ſix high in the back, and from nine to eighteen inches in front, the ends made ſloping anſwerably from the back to the fore-part; each Frame is furniſhed with three glaſs ſaſhes,

ſaſhes, commonly called lights, for the top to move on and off, and ſlide up and down occaſionally; but beſides theſe three-light Frames, one or more two-light, and a one-light Frame of proportionable ſize may alſo be neceſſary for ſmaller purpoſes, ſuch as for ſeed and young ſeedling plants to nurſe them till large enough for the larger Frames; but as the moſt common Frames for general uſe are thoſe uſed in kitchen gardens, in the culture of cucumbers and melons, which alſo ſerve occaſionally for various other plants, both eſculent and flowers, we ſhall firſt exhibit the particular dimenſions of ſuch kind of Frames, then deſcribe the others for particular uſes.

The common kitchen-garden Frames may be of three different ſizes, i. e. for one light, two lights, and three lights; the latter of which however are the moſt material, and which are employed for general uſe, but it is neceſſary alſo to have one or more one-light and two-light Frames, eſpecially in private gardens, the former as a ſeed Frame, for a ſmall hot-bed, particularly for the ſeeds of cucumbers and melons for the early crops; and the two-light one as a nurſery Frame to the young plants of the ſame kinds, &c. to forward them to a due ſize for the three-light Frame.

The one-light Frame therefore may be about four feet and a half width from back to front, and three feet ſix the other way, fifteen or eighteen inches high in the back, and nine in front, with a glaſs ſaſh or light, made to fit the top completely, to ſlide up and down, and move away occaſionally.

The two-light Frame may be ſeven feet long, four and half wide, and fifteen or eighteen inches high in the back, and nine in front, having one croſs bar, three inches width, ranging from the middle of the back at top, to that of the front, ſerving both to ſtrengthen the Frame, and help to ſupport the lights; the two lights to be each three feet ſix wide, made to fit the top of the Frame exactly.

The three-light Frames ſhould be ten feet ſix inches long, four and a half wide, and from eighteen inches to two feet high in the back, and from nine to twelve or fifteen inches in front; obſerving that thoſe deſigned principally for the culture of melons, may be rather deeper than for cucumbers, becauſe they generally require a greater depth of mold or earth on the beds, though Frames eighteen or twenty inches in the back, and from nine to twelve in front, are often made to ſerve occaſionally, both for cucumbers and melons; each Frame to have two croſs bars ranging from the top of the back to that of the front, at three feet ſix inches diſtance, to ſtrengthen the Frame, and ſupport the lights, and the three lights to be each three feet ſix inches wide; the whole together being made to ſit the top of the Frame exactly every way in length and width.

Sometimes the above ſort of Frames are made of larger dimenſions than before ſpecified, but in reſpect to this, it ſhould be obſerved, that if larger they are very inconvenient to move to different parts where they may be occaſionally wanted, and require more heat to warm the internal air, and in reſpect to depth particularly, that if they are but juſt deep enough to contain a due depth of mold, and for the plants to have moderate room to grow, they will be better than if deeper, as the plants will be then always near the glaſſes, which is an eſſential conſideration in early work, and the internal air will be more effectually ſupported in a due temperature of warmth, for the deeper the Frame, the heat of the internal air will be leſs in proportion, and the plants being far from the glaſſes will be ſome diſadvantage in their early growth; beſides, a too deep Frame, both in early and late work, is apt to draw the plants up weak, for they always naturally aſpire towards the glaſſes, and the more ſpace there is, the more they will run up, for which reaſon the London kitchen gardeners have many of their Frames not more than fourteen or fifteen inches high behind, and ſeven in front, eſpecially thoſe which are intended to winter the more tender young plants, ſuch as cauliflower, lettuce, and for raiſing early ſmall ſallad-herbs, raddiſhes, &c.

But Frames deſigned for the protection of taller plants, ſhould be deeper in proportion, as for example, if deſigned as a nurſery Frame for young pine-apple plants, three feet ſix by fifteen, or eighteen, will be the proper depth; arranging the largeſt plants behind, the young yearling ones more forward, and the crowns and ſuckers of the year in the front of all; a Frame of this dimenſion may ſerve alſo for any of the hardier kinds of low green-houſe plants, as myrtles, &c. either in default of a proper green-houſe, or as an eaſement to one when too much crowded.

A drawing Frame for annuals, i. e. for drawing the larger ſorts to a tall ſtature, ſuch as the *Coloſia criſtata*, or cock's-comb, and the *Amaranthus*

*Amaranthus tricolor*, &c. the Frame for this purpoſe is ſometimes made as deep as it is intended to draw the plants in height, and is ſometimes compoſed of three, four, or more different Frames of equal width and length, to place upon one another occaſionally, as the plants advance in ſtature; the former is ſometimes made four, five, or ſix feet high in the back, and three, four, or five, in front, but the front ſhould be glazed to admit the light and heat of the ſun, otherwiſe the Frame would form a kind of deep pit, which would draw the plants up too faſt into ſmall weak ſtems, and they would alſo be apt to loſe all their lower leaves: that part ſhould alſo be made to open occaſionally, for giving water, or a larger portion of air in hot weather; the mode of uſing this Frame is, that after the plants are drawn about a foot and a half high in any common hot-bed Frame, another hot-bed is made for the deep Frame, in which the plants are placed to remain to grow to their full ſtature. The other ſort of drawing Frame is frequently called a multiplying drawing-Frame, as being compoſed of different parts, one of the parts may be of the dimenſions of a common hot-bed Frame, eighteen inches by nine or ten deep, and on this the glaſſes are to be placed; the other parts for multiplying the depth occaſionally, muſt be each exactly the ſame width and length of the firſt, and a foot deep on every ſide: and as to the mode of uſing them, the firſt or principal Frame having the glaſſes, is placed firſt on the bed, and when the plants have reached the glaſſes, remove this Frame off the bed, and place on one of the others, then place the firſt Frame and glaſſes upon that, and as the plants again advance in height, another multiplyer muſt be added, and after that another, always ſtill having the principal Frame with its glaſſes uppermoſt, obſerving, that if the front of each of theſe Frames, both the principal one and multiplyers were glazed, to admit the light and heat of the ſun, it would greatly improve the growth of the plants. Another ſort of drawing Frame may be formed thus: having one of the common hot-bed Frames with its lights, place it upon the bed, and having four ſtout poſts, one fixed at each corner cloſe to the Frame, four or five feet high, in which are bored holes ſix inches diſtance, and four iron or wooden pins are provided, one for each poſt, and when the plants arrive at the glaſſes, the Frame is drawn up a little, and the pins fixed in the holes, then reſt the bottom of the Frame upon the pins; and continue raiſing it from time to time as the plants advance higher. The vacancy at bottom may be eaſily cloſed up with boards or garden-mats, and if the front was cloſed with oiled paper to admit the light, it would be an advantage; it is alſo proper to have the front to open occaſionally for giving air and water.

In all the ſorts of Frames of every dimenſion here ſpecified, the wood-work of the back, ends, and front, ſhould be of inch or inch and quarter deal, as before obſerved, which ſhould be all neatly planed even and ſmooth on both ſides; and the joints, in framing them together, ſhould be ſo cloſe that no wet nor air can enter; the croſs-bars or bearers at top, for the ſupport of the glaſſes ſhould be about three inches broad and one thick, and neatly dove-tailed in at back and front even with both edges, that the lights may ſhut down cloſe, each having a groove or channel along the middle, to conduct off all wet falling between the lights: at the end of each Frame at top, ſhould be a thin ſlip of board four inches broad, arranged from back to front, joining cloſe up to the outſide of the lights, which being neceſſary to guard againſt cutting winds, ruſhing in at that part immediately upon the plants, when the lights are occaſionally tilted behind for the neceſſary admiſſion of freſh air, &c.

With reſpect to the lights, the wood-work of the Frame ſhould be inch and half thick, and two and half broad; and the bars for the immediate ſupport of the glaſs-work, ſhould be about an inch broad, and not more than inch and half thick, for if too broad and thick, they would intercept the rays of the ſun, ſo ſhould be only juſt ſufficient to ſupport the glaſs-work without bending, and ſhould be ranged from the back part to the front, eight or nine inches aſunder.

All the wood-work, both of the Frames and lights, ſhould be painted in oil, to preſerve them from decay; a lead colour will be the moſt eligible, and if done three times over, outſide and in, will preſerve the wood exceedingly from the injuries of weather, and from the moiſture of the earth and dung.

The glaſs-work of the lights may either be laid in lead and well trimmed with cement, air and water tight; or may be laid in the bars of wood in putty, *imbricatum*, i. e. overlaid, or lapping at the ends; the latter method is by ſome preferred, as being more effectual for the diſcharge of wet, and the

imbricatures or lapping of the panes being by ſome left open or unputtyed at bottom, that the rancid vapour naturally ariſing in hot-beds, and all condenſed drops againſt the glaſſes, may be diſcharged at theſe places, as well as admit a perpetual moderate current of freſh air, proves very beneficial to all plants: this mode however of leaving the lappings open, is by ſome objected againſt, eſpecially for very early work, on account of the too free admiſſion of air in cold weather; I however have uſed them with great ſucceſs at all ſeaſons, though in the kitchen-gardens about London, where there are vaſt quantities of framing always at work, their lights are, for the general part, laid in lead, in panes about ſix or eight inches ſquare: in either method of glazing the beſt ſort of white glaſs ſhould be uſed, and the greateſt care exerted to make the whole perfectly water-tight.

FRAXINUS, the Aſh-tree.

There are three ſpecies, all hardy deciduous trees, one of them a lofty foreſt tree, the others of lower growth, uſed principally in ornamental plantations, all of them adorned with compound leaves of ſeveral pair of lobes terminated by an odd one.

Claſs and order, *Polygamia Dioecia.*

*Characters.*] CALIX, hermaphrodite and female flowers on the ſame and on different trees, having ſometimes ſmall monophyllous cups, and ſometimes none. COROLLA, either none, as in the common aſh; or, as in ſome ſpecies, four narrow petals. STAMINA, two ſhort filaments, and oblong antheræ. PISTILLUM, an oval germen, erect ſtyle, and bifid ſtigma. PERICARPIUM, a compreſſed fruit, having a ſingle, ſpear-ſhaped compreſſed ſeed.

The fruit of the aſh are commonly called aſh-keys.

The ſpecies are;

[1]FRAXINUS *excelſior.*

*Moſt lofty or common aſh-tree.*] Fraxinus, with a large upright grey ſtem, riſing ſixty or ſeventy feet high, branching upward into a full regular head, garniſhed with large compound leaves of five pair of ſawed lobes, terminated by an odd one, and ſmall greeniſh flowers without petals.

*Varieties.*] With ſilver-ſtriped leaves—gold-ſtriped leaves.

[2]FRAXINUS *Americana.*

*American Aſh. Varieties* of this are;

*Black American Aſh*,—having an erect ſtem, branching twenty or thirty feet high, large very dark leaves, compoſed of three or four pair of lobes, and an odd one; ſmall greeniſh flowers, and broad blackiſh fruit.

*White American Aſh*—having an upright whitiſh ſtem and branches, growing twenty or thirty feet high, light green leaves, compoſed of about three pair of obtuſely ſawed lobes, placed far aſunder, terminated by an odd one, ending in a very long point, decaying to a whitiſh colour in autumn.

*Red American Aſh*—grows twenty or thirty feet high, having reddiſh ſhoots, large light green leaves, of about three pair of diſtinctly ſawed lobes, terminated by an odd one, five or ſix inches long, and three broad, decaying to a reddiſh hue in autumn.

*Calabrian Manna Aſh*—grows twenty feet high, leaves compoſed of four or five pair of lobes and an odd one; and ſmall greeniſh flowers: from the exſudation of the leaves is collected the manna of the ſhops.

[3]FRAXINUS *Ornus.*

*Flowering Aſh.—Varieties* of this are;

*Virginia flowering Aſh*—grows twenty or thirty feet high, leaves compoſed of three or four pair of ſawed lobes far aſunder, terminated by an odd one; and large looſe bunches of white flowers, at the end of all the branches, furniſhed with petals.

*Dwarf flowering Aſh*—grows twelve or fifteen feet high, ſmalliſh dark green leaves of three or four pair of ſawed lobes and an odd one, and ſmall bunches of flowers furniſhed with petals.

All theſe three ſpecies and varieties are very hardy deciduous trees, the firſt ſort grows common in hedges and woods all over England, but all the others are principally of American growth; all the ſorts flower in April and May, of which none but the *Fraxinus ornus* make any appearance, the others being ſmall, apetalous, and greeniſh; the flowering aſh however, is very ornamental in bloſſom, the bunches being large, and terminate almoſt every branch, appearing extremely conſpicuous; none however but the common aſh produce ſeed in this country, which ripen in great abundance in autumn; but thoſe of all the others are often procured from America by the ſeedſmen, which, as well as the common ſort, grow freely here in any common earth.

The common ſort is generally conſidered as a foreſt or timber-tree, and as ſuch is very valuable, the timber being excellent for many uſeful purpoſes; particularly for almoſt all ſorts of huſbandry implements, ploughs, harrows,

rows, waggons, carts, axle-trees, wheel-fellies, &c. and the poles of the underwood are proper for hoops, hop-poles, and many other uſes; and as the trees grow freely upon almoſt any ſoil, and of quick growth, they may be cultivated to great advantage, ſome to cut every ſeven, ten, or fifteen years for poles, others left to grow for timber; the lop-pings are excellent fuel, and burn well, green or dry, ſo that old pollards, for the purpoſe of lopping at proper intervals of time, will be very profitable.

But the other two ſpecies and varieties are eſteemed principally to aſſiſt in forming va-riety in ornamental plantations, but the flow-ering kinds having the greateſt merit for or-nament, ſhould be introduced in the moſt conſpicuous parts of view.

*Propagation of all the Sorts.*

All the ſorts may be raiſed plentifully from ſeed, which the common ſort furniſh in abundance; but the other ſorts rarely furniſh-ing any here, are procured from abroad, or when their ſeeds cannot be obtained, they are propagated by budding upon ſtocks of the common aſh.

By ſeed.—The common ſort ſhould be ſown in autumn, ſoon after they are ripe, and thoſe of the others as ſoon as they can be obtained, which commonly arrive early in ſpring, and the ſooner the better; prepare for all the ſorts beds of common earth four feet wide, ſow the ſeeds evenly on the ſurface, and cover them an inch deep, ſome of the plants will come up the ſpring following, and many not till the ſecond ſpring: when they are a year or two old, prick them out into nurſery rows, two feet aſunder, and one foot in the lines, and here to remain till they are four, five, or ſix feet high or more, then tranſplant them where they are to remain.

By Budding and Grafting.—This is often practiſed in default of ſeeds, to propagate the ſecond and third ſpecies and varieties, as alſo to continue the variegated kinds, working all of them upon ſtocks of the common aſh, at the uſual ſeaſon of budding and grafting.

FRITILLARIA, Fritillary, including alſo the *Corona Imperialis* and Perſian Lily.

This genus furniſhes a great variety of bul-bous-rooted flowery perennials, proper to adorn the compartments of the pleaſure-gar-den, producing annual ſtalks from about one foot to a yard or more high, terminated by large, bell-ſhaped, liliaceous flowers.

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX, none. COROLLA, is compoſed of ſix oblong petals, forming a bell-ſhape, ſpreading broad at the baſe. STA-MINA, ſix filaments, and erect four cornered antheræ. PISTILLUM, an oblong three cor-nered, germen, ſimple ſtyle, and triple ſtig-ma. PERICARPIUM, an oblong, trilobate, trilocular capſule, and numerous flat ſeeds.

The ſpecies are;

[1]FRITILLARIA *Meleagris.*

*(Meleagris) or alternate-leafed Fritillary.*] Fritillary, with a depreſſed, fleſhy, bulbous root, an erect flower-ſtalk a foot or fifteen inches high, garniſhed with long narrow leaves placed alternate, and the top termi-nated by one or more large bell-ſhaped flow-ers hanging downwards, of different proper-ties in the varieties.—Some finely chequered in regular ſquares, others of plain colours, as deſcribed below.

[2]FRITILLARIA *Pyrenaica.*

*Pyrenean, oppoſite-leafed Fritillary.*] Fritil-lary with a double, fleſhy, bulbous root, an upright flower-ſtalk twelve or fifteen inches high; garniſhed with long narrow leaves by pairs oppoſite, and the top terminated by two or more large bell-ſhaped flowers hanging downward, of different colours and proper-ties in the varieties.

*Varieties* of the above two ſpecies are—com-mon chequered Fritillary, of which there are ſeveral varieties curiouſly chequered with purple, white, and other colours—dark pur-ple, yellow ſpotted Fritillary—yellow flower-ing—great yellow flowering—variegated yel-low flowered—white flowered—black flowered—with red flowers—red ſpotted flowers—large double-flowering—ſpotted flowered, dif-ferent varieties—umbelliferous flowering—ſpiked flowering—with narrow leaves—broad leaves. All theſe varieties have great merit in the diverſity of their large bell-ſhaped pendu-lous flowers, and thoſe of the chequered kinds have particular ſingularity, being finely chequered in regular ſquares in a very curious manner, flowering principally in the latter end of March, in April, and ſome part of May, ſome late ſorts alſo in June; all of them are ſucceeded by plenty of ſeed in au-tumn.

[3]FRITILLARIA *Perſica.*

*Perſian Fritillary*, commonly called *Perſian Lily.*]—Varieties of this are.

*Tall Perſian Lily.*—Hath a round, whitiſh, bulbous root, an upright firm ſtalk a yard

high, closely garnished with long, narrow, obliquely-waved leaves, and the top terminated by a large pyramidal spike of deep purple flowers spreading wide at their brims.

*Dwarf Persian Lily.*—Produces an erect stalk a foot and half high, small leaves, and somewhat branching spike of deep purple flowers.

4 FRITILLARIA *Imperialis.*

*Imperial Fritillary, commonly called Crown-Imperial (Corona Imperialis)* Fritillary with a very large, round, scaly, bulbous, yellow root, an upright, thick, succulent stalk, three or four feet high, garnished with long narrow leaves; and crowned by a vast surrounding cluster of large, bell-shaped, pendulous flowers, these surmounted by a large crown of leaves; flowering in different colours and properties in the varieties.

The root of this species and varieties is composed of numerous, thick, succulent scales, and is remarkable for imparting a very disagreeable rank odour.

*Varieties of this are*; crown imperial with dusky red flowers—with bright red flowers—late red-flowering—double red flowers—golden yellow flowers—pale yellow flowers—yellow striped flowers—double yellow flowers—doubly-crowned, or crown upon crown, having two tier of flowers one above another—triply-crowned, having three tier of flowers—with gold-striped leaves—and with silver-striped leaves. All these varieties are fine majestic plants, of three or four feet stature, making a singularly grand appearance with their large noble crown of flowers, &c and greatly ornament our gardens so early as April and May; all of them so hardy, of easy culture, and encrease so plentifully by off-sets from the roots, that they might be obtained in abundance in every garden.

The flowers of all the four species of *Fritillaria*, and their varieties, have universally a campanulate, hexapetalous corolla, of the liliaceous kind, all remarkable for their pendulous or hanging position; those of the crown imperial considerably the largest, but all of them form a fine variety in the flower-garden.

All the species and respective varieties are very hardy, bulbous-rooted perennials, the roots of great duration, but the flower-stalks are renewed annually in spring; which in the different sorts flower in March, April, May, and June, when, and in July, they ripen seeds, and the stalks then assume a state of decay, the bulbs become inactive for that season, and ripe for removal, if necessary, either for the purpose of encrease by off-sets, or for transplantation into fresh digged earth, both of which operations may be proper every second or third year, for in that time they will have encreased exceedingly by off-sets into large bunches, and should be divided, and that being planted again in fresh-dug soil, will greatly improve their future bloom.

They all form a fine variety in the principal borders, the two common Fritillary kinds and their varieties shew to best advantage when disposed in three or four roots together, in small patches towards the front of the borders, that is, if they are placed in assemblage with other flowers. The Persian Fritillary or Lily should be stationed rather more backward in the border, and the crown imperials should occupy the middle range behind both these, as being of larger growth, and should always be placed singly, and two or three yards distance in the line; or if you plant the bulbs in beds by themselves, set the Fritillary and Persian-lily kinds in rows a foot asunder, and the same distance in each row, and three or four inches deep; and the crown imperials a foot and half distance each way, and four or five inches in depth.

The season for planting or transplanting all these bulbs is, when thir flower-stalks are decayed in July or beginning of August, tho' the bulbs taken up at that time, may be kept out of the ground two or three months, if necessary, by being laid in dry sand; but the Fritillary and Persian-lily are rather more impatient out of the earth than the crown imperial, and therefore should always be put in again as soon as possible.

Observe, it is always proper to remove all these bulbs every second or third year, to separate the off-sets, and replant the whole in fresh-dug ground. See their *Propagation.*

*Propagation of all the Sorts.*

The more general mode of propagation of all these plants is by off-sets, which they all furnish abundantly from the sides of their roots, and which may be separated every second or third year; the proper time is, when their flower-stalks decay as aforesaid, taking the whole cluster of roots out of the earth, and separate them into distinct roots, planting the smaller off-sets by themselves in nursery beds, to remain a year or two, to acquire a flowering state; and the larger roots, plant where

where they are deſigned to remain for flowering.

They are alſo propagated by ſeed; but this is principally practiſed to gain new varieties, and the proceſs is tedious; the Fritillary and Perſian-lily will be three years, and the crown imperial ſometimes ſix or ſeven before they flower in perfection.

The ſeed are to be ſown in boxes of light earth in Auguſt or September, covering them with earth a quarter of an inch deep, managing them nearly as directed for *colchicums*, tulips, &c. which ſee.

FRUIT-TREES, comprehending ſuch as produce eatable fruit, either for the deſert or culinary uſes.

There are about twelve genera of Fruit-trees and fruit-bearing ſhrubs and ſhrubby plants that ripen their fruit perfectly in this country, each genus compriſing ſeveral ſpecies, and each ſpecies numerous varieties, all of which are exhibited in their reſpective genera; ſo in this place we ſhall only give a liſt of each genus and its principal ſpecies, to ſhew at one view the genus in which each ſpecies is placed according to botanic arrangement.

AMYGDALUS, *Almond-tree*—three ſpecies, the almond, peach, and nectarine; of each of which are many varieties, eſpecially of the peach and nectarine. See AMYGDALUS.

CORYLUS, *the Hazel*, or *Hazel-nut tree*—one ſpecies compriſing the common hazel-nut of the woods—filbert-tree—Barcelona or Spaniſh nut—cob-nut, &c. See CORYLUS.

FAGUS, *Beech-tree*—compriſing the *Fagus Caſtanea* or cheſtnut-tree.

FICUS, *the Fig-tree*—one ſpecies comprehending numerous varieties. See FICUS.

JUGLANS, *Walnut-tree*—one ſpecies of the common walnut, compriſing ſeveral varieties. See JUGLANS.

MESPILUS, *Medlar* — compriſing three principal ſorts. See MESPILUS.

MORUS, *Mulberry tree* — includes three principal ſorts. See MORUS.

PRUNUS, *Plum tree*—includes three principal ſpecies—the plum-tree—apricot—and cherry-tree, each compriſing many varieties; comprehends alſo, the bullace-tree, and the ſloe. See PRUNUS.

PYRUS, *Pear-tree*—compriſes three ſpecies—the pear—apple—and quince, each having many varieties; particularly the pear and apple, whoſe varieties are without end. See PYRUS.

RIBES, *Currant tree*; and *Ribes Groſſularia*, the gooſeberry-buſh; each of which comprehenſive in many eminent varieties. See RIBES.

RUBUS IDÆUS, *Raſberry*—one ſpecies compriſing three or four principal varieties. See RUBUS.

VITIS, *the Vine*—one ſpecies comprehenſive in numerous elegant varieties. See VITIS.

Each of the above genera of fruit-trees, &c. are exhibited in their proper place, and under each are arranged its principal ſpecies, with that of the varieties of each reſpective ſpecies, with their proper names, deſcription, propagation, and general culture.

FUMARIA, Fumatory.

It furniſhes ſome low, tuberous, and bulbous-rooted, flowery perennials, for the flower-garden; producing annual ſtalks ſix or eight inches high, terminated by ſhort ſpikes of ringent flowers.

Claſs and order, *Diadelphia Hexandria*.

*Characters.*] CALIX, two ſmall deciduous leaves. COROLLA, is tubular and ringent, having the lips plane, obtuſe, emarginated and reflexed, having a nectarium at their baſe, and the chops of the corolla four-cornered. STAMINA, ſix equal, broad filaments, each having three antheræ. PISTILLUM, an oblong germen ſhort ſtyle, and an orbicular compreſſed ſtigma. PERICARPIUM, a ſhort unilocular pod and roundiſh ſeeds.

The principal ſpecies are;

[1]FUMARIA BULBOSA.

*Bulbous-rooted Fumatory.*—Varieties of this are.

*Hollow bulbous Fumatory (Cava).*—Having a large fleſhy root, hollow in the middle, crowned by branching leaves, dividing into many ſmall parts, and upright ſtalks ſix inches high, adorned with leaves, and terminated by ſpikes of reddiſh-purple flowers, in April.

*Solid bulbous Fumatory (Solida).*—Having a large, round, ſolid, yellow root; leaves like the former, and ſtalks four or five inches high, adorned with leaves, and terminated by ſpikes of purple flowers, in April.

[2]FUMARIA *Cucullaris.*

*Tuberous-rooted, forked-flowered Fumatory.*] Fumaria, with a ſmall, round, ſcaly root, crowned by leaves divided into three principal parts, each dividing into many ſmaller; upright leafleſs ſtalks, eight or nine inches high, terminated by a looſe ſpike of dull white flowers forked at their baſe; flowering in May.

[3]FUMARIA *Capnoides.*

*Capnoides, or branching ever-green Fumatory.*] Fumaria with a fibrous root, ſending out many ſlender tufty ſtalks, branching eight or nine inches high; finely divided ever-green leaves, and all the branches terminated by looſe pannicles of bright yellow flowers moſt part of ſummer.

*Variety.*] With a whitiſh flower.

[4]FUMARIA *Sempervirens.*

*Ever green podded annual Fumatory*, or *Capnoides.*] Fumaria, with an upright ſtalk branching a foot and half high, garniſhed with branchy finely-divided leaves, and all the branches terminated by looſe ſpikes of pale-purple flowers moſt part of ſummer, ſucceeded by narrow paniculated pods.

The flowers of all theſe plants are of the ringent or gaping kind, are ſmall, but form a pretty variety.

All theſe plants may be employed to adorn the borders of the pleaſure-gardens, placing them in ſmall patches towards the fronts of the borders, where they will appear very ornamental.

The third and fourth ſpecies are alſo proper to diſpoſe on the ſides of rock work, grottos, artificial ruins, &c.

*Their Propagation.*

The two firſt ſpecies and varieties are propagated by off-ſets from their roots, in the manner as other bulbous plants, when their leaves decay any time from May till Auguſt, which may be performed every two or three years, or according as they multiply.

The third and fourth ſpecies are eaſily raiſed in abundance from ſeed, ſown ſoon after they ripen, or in ſpring, ſowing them where they are to remain, or for tranſplanting.

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# G.

GALANTHUS, Snow-drop.

It conſiſts of one low bulbous-rooted flowery perennial for the flower-borders, riſing but a few inches high, adorned at top with ſmall tripetalous flowers.

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX, an oblong ſpatha opening ſide-ways. COROLLA, three oblong concave ſpreading petals, and in the bottom, a three-leafed nectarium. STAMINA, ſix ſhort filaments, and oblong pointed connivent antheræ. PISTILLUM, an oval germen under the corolla, ſlender ſtyle, and ſimple ſtigma. PERICARPIUM, a three-cornered trilocular capſule, and numerous roundiſh ſeeds.

There is but one ſpecies, viz.

GALANTHUS *Nivalis.*

*Snow drop.*] Galanthus with a ſmall, tunicated bulbous root, crowned with ſeveral long, narrow, blueiſh green leaves, and amidſt them ſmall angular-naked flower-ſtalks, four or five inches high, terminated by a ſpatha, each protruding one ſmall ſnow-white flower drooping downward.

*Varieties.*—Common ſingle-flowered ſnow-drop—ſemi-double ſnow-drop—double ſnow-drop.

Theſe are delightful little plants, conſidering the early appearance of their ſnow-white flowers, adorning our gardens often in January and February, when ſcarce any other flower is to be ſeen, and frequently burſting forth when the ground is covered with ſnow, continuing very often till the beginning of March, and make a very ornamental appearance, eſpecially when diſpoſed in cluſters towards the fronts of borders, &c.

The ſingle ſort comes firſt into bloom, then the ſemi-double, and after that the double.

They ſhould be employed to adorn the fronts of flower-borders, the edges of wilderneſs plantations, the borders of wood-walks, and the fronts of ſhrubbery-clumps, &c. for they will ſucceed any where, and multiply exceedingly by off-ſets from the roots.

They effect conſiderably the beſt appearance when diſpoſed in bunches of ſeveral roots together, placing ſome near the edge of the borders, other bunches a foot or more back, in which order they will form variety more eligibly than in ſtraight rows; or when diſpoſed ſingly, or by way of edgings to borders, as ſometimes practiſed, in which they cut a ſtraggling appearance at firſt.

The

The roots ſhould therefore be planted five or ſix together at leaſt in a cluſter, placing them two or three inches deep, and permit them to remain undiſturbed four or five years to encreaſe into large bunches, they will then form the beſt appearance.

Their propagation is by off-ſets of the roots, the beſt ſeaſon for which is June or July, though, they being ſo hardy, it may be done at almoſt any time after the bloom; but I would prefer ſummer for that work, when their leaves decay, and may either be planted directly, or kept out of the ground till October or November; but do not however retain them longer out of the ground than December, otherwiſe they will flower weak the firſt year. See BULBUS.

GARDENS. Gardens and plantations are grand, ornamental, and oeconomical improvements to a country ſeat and eſtates in general, and may be divided into the following principal diſtricts: The pleaſure-garden—kitchen-garden—orchard—nurſery—and plantations. For a proper deſcription of each, ſee PLEASURE-GARDEN, KITCHEN GARDEN, &c.

GARDENIA, Cape Jaſmine.

There is but one ſpecies, a ſhrubby, very floriferous ever-green, for the green-houſe, and hot-houſe.

Claſs and order, *Pentandria Monogynia*

*Characters.*] CALIX, is monophylous, quinquangular, five-parted and permanent.—COROLLA, a ſalver-ſhaped petal, with a cylendric tube, a plane limb deeply divided into five oval ſegments. STAMINA, no filaments, but five narrow antheræ. PISTILLUM, a germen under the corolla, ſlender ſtyle, and bilobed oval ſtigma. PERICARPIUM, a bilobed berry, and many ſeeds.

The ſpecies is;

GARDENIA *florida.*

*Gardenia, or flowery Cape Jaſmine.*] Gardenia with a woody ſtem, branching in pairs ſeveral feet high, ſpear-ſhaped, entire, ſhining green leaves, four or five inches long, and half as broad, growing by pairs oppoſite; and at the ſides and ends of the branches large cloſe-ſitting flowers, of great fragrance.

The flowers of this ſhrub, although in their characteriſtic ſtate reckoned monopetalous, yet they are often ſemi-double, having two or three ſeries of petals, and often as large as a middling roſe.

This plant is a native of the Cape of Good Hope, but will live here in the full air in ſummer, and in a green-houſe in winter, but flowers beſt in the hot-houſe.

It muſt always be kept in pots of light rich earth.

It is eaſily propagated by layers and cuttings. Lay down ſome young ſhoots in ſpring, in the earth of the pots, they will readily ſtrike root: and cuttings of the ſhoots planted in pots in ſpring or ſummer, and plunged in a bark-bed, or any hot-bed under glaſſes, they will be well rooted in two or three months, when they ſhould be planted in ſeparate pots.

GENISTA, Broom.

This genus retains low, ſhrubby, deciduous, and ever-green plants for the pleaſure-ground and green-houſe, growing from two to ſix or ſeven feet high, adorned with ſmall ſimple leaves, and papilionaceous yellow flowers.

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX, is monophyllous, tubulous, and bilabiated. COROLLA, is papilionaceous; the vexillum, oval, acute, and wholly reflexed; the wings oblong, ſhort, and looſe; and the keel long and erect. STAMINA, ten diadelphous filaments, and ſimple antheræ. PISTILLUM, an oblong germen, an aſcending ſtyle, and acute involute ſtigma. PERICARPIUM, a roundiſh, bivalvate, unilocular pod, and kidney-ſhaped ſeed.

*Hardy Kinds.*

[1]GENISTA *Sagittalis.*

*Sagittated* or *Arrow-ſhaped, Jointed-Broom.*] Geniſta, with trailing, two-edged, green, ſhrubby ſtalks, dividing into many trailing, flat-jointed branches, garniſhed with ſmall oval-lanceolate leaves, ſingly at each joint, and cloſe ſpikes of yellow flowers at the ends of the branches.

[2]GENISTA *Tinctoria.*

*Dyer's Broom.*] Geniſta, with upright, ſhrubby ſtalks, branching erectly two or three feet high, having taper-ſtriated branches, garniſhed with ſpear-ſhaped, alternate leaves, and from the ſides and ends of the branches numerous ſmall yellow flowers.

*Variety.*—Dyer's-broom with ſpreading branches.

The name *Tinctoria*, or dyer's-broom, to this ſpecies is derived from its uſe in dying; it grows naturally in ſeveral parts of Britain, &c.

[3]GENISTA,

[3]GENISTA, *Anglica.*

*Engliſh Geniſta*, or *Dwarf Engliſh Broom*, or *Petty Whin.*] Geniſta, with ſhrubby ſtalks branching two or three feet high, armed with long ſingle ſpines below, and garniſhed with ſmall ſpear-ſhaped alternate leaves, and cluſters of yellow flowers at the ends of the branches.

This ſpecies grows wild on heaths and other barren places in many parts of England, but is often admitted into gardens for variety.

[4]GENISTA, *Tridentata.*

*Tridented-leafed Portugal Broom.*] Geniſta with upright ſhrubby ſtalks, dividing into many three-cornered branches, riſing three or four feet high, garniſhed with three-pointed leaves, and large yellow flowers, ſingly from the ſides and ends of the branches.

*Variety.* — Low narrow leafed Portugal Broom.

[5]GENISTA, *Candicans.*

*Upright Montpelier Geniſta*, or *Cytiſus of Montpelier.*] Geniſta, with an upright ſhrubby ſtriated ſtem, branching four or five feet high; garniſhed with trifoliate-leaves, hairy underneath, and bright yellow flowers from the ſides of the branches.

*Green-houſe Kinds.*

[6]GENISTA *Canarienſis.*

*Canary Broom*, or *Ever-green Cytiſus, from the Canary Iſlands.*] Geniſta with upright woody flexible ſtalks, branching ſix or eight feet high, into many angular branches, garniſhed with trifoliate, hairy, ever-green leaves, and ſpikes of bright yellow flowers from the ends of the branches.

*Variety* —With white flowers.

The flowers of all theſe ſpecies of *Geniſta*, are of the papilionaceous or butterfly kind, having each four petals; the ſtandard, two wings, and the keel. See the *Characters.*

They flower principally in May and June, and furniſh plenty of ſeeds in autumn.

Of the above ſpecies, the firſt five are hardy deciduous ſhrubby plants for the ſhrubbery; and the ſixth, a tender ever-green for the green-houſe; they all poſſeſs merit as flowery plants, being very floriferous in May and June, and as to the hardy ſorts, they are choice furniture for the fronts of the ſhrubbery-clumps, contiguous to the principal lawns and walks; and the ſixth is a beautiful plant for the green houſe collection, which muſt always be retained in pots for moving to the green houſe in winter.

*Propagation, &c.*

All the hardy ſorts are eaſily raiſed from ſeed in a bed of common earth in autumn, i. e. September, October, or November, covering them with earth near an inch deep; they will riſe in ſpring, and in ſpring following: when the plants are a year old, tranſplant them in nurſery-rows, or if ſome are planted at once where they to remain, they will ſucceed better, becauſe, having long tough roots, they do not thrive well by removal when old; the green-houſe ſort may alſo be raiſed abundantly by ſeed in ſpring, by aid of a moderate hot-bed, ſowing the ſeed in pots, and plunge them in the hot-bed: when the plants are three or four inches high, prick them into ſeparate ſmall pots, and manage them as other green-houſe kinds.

GENTIANA, Gentian, and *Gentianella.*

The plants are principally hardy, herbaceous perennials, of the flowery and medical kind, of different growths, from three or four inches to three or four feet ſtature, ornamented with oblong, ſimple leaves, and largiſh monopetalous, tubular, four or five-parted flowers.

Claſs and order, *Pentandria Digynia.*

*Characters.*] CALIX, is oblong, quinquefid and permanent. COROLLA, is monopetalous, tubular at the baſe, and four or five-parted at the top. STAMINA, five ſhort filaments, and ſimple antheræ. PISTILLUM, a cylindric germen, no ſtyle, the germen crowned by two oval ſtigmas. PERICARPIUM, an oblong bivalvate, unilocular capſule, and numerous ſeeds.

The principal ſpecies are;

[1]GENTIANA, *Acaulis.*

*Short-ſtalked blue Gentian, commonly called Gentianella.*] Gentian, with thick fibrey roots, crowned by oblong leaves, many flower-ſtalks but two or three inches high, exceeded by the corolla, garniſhed with ſpear-ſhaped, cloſe-ſitting, oppoſite leaves; and at top, large, bell-ſhaped, five-parted, erect, azure-blue flowers, of great beauty, appearing in May.

[2]GENTIANA, *Aſclepiadea.*

*Aſclepias-leafed Gentian.*] Gentiana, with thick fibery roots, crowned by oval-lanceolate leaves, flower-ſtalks a foot high, garniſhed with oval, ſpear-ſhaped amplexicaule, oppoſite leaves, and from each ſide largiſh, bell-ſhaped, blue flowers by pairs, appearing in June and July.

[3]GENTIANA,

[3]GENTIANA, *Cruciata.*

*Croſs-wort Gentian.*] Gentiana, with creeping fibrey roots, weak flower-ſtalks ſix inches long, garniſhed with ſpear-ſhaped, oppoſite leaves by pairs, each pair croſſing the other, and four-parted, light blue flowers, in whorls below, and in cluſters at top, appearing in May.

[4]GENTIANA *Lutea.*

*Great Yellow Gentian*] Gentiana, with thick, carroty-yellow, roots, crowned by large, oval, oblong-pointed, veined, ſtiff leaves; ſtrong flower-ſtalks three or four feet high, garniſhed with ſmaller, oppoſite, amplexicaule leaves; and wheel-ſhaped, deeply, five-parted, yellow flowers, in whorls at the upper parts, appearing very ornamental in July and Auguſt: it is alſo a valuable medical plant, and the root is the uſeful part.

The flowers or corolla of all theſe plants is of one tubular petal, more or leſs divided into four or five parts. See the *Characters.*

The plants are all perennial in root, but annual in ſtalk, which riſe in ſpring, flower in ſummer, produce abundance of ſeed in autumn, and ſoon after die to the ground.

All the ſpecies, conſidered as flowery plants are very ornamental, the low ſorts are elegant furniture for the fronts of borders and other flower compartments, and the large yellow kind ſhould be ſtationed more backward, among the taller claſs of plants, where it will exhibit a noble appearance; and as all the ſorts proſper in any common ſoil, affording plenty of ſeed for propagation, ſeveral of them alſo encreaſe by off-ſets, they may be obtained plentifully in every garden.

All the ſorts are eaſily raiſed from ſeed in the full ground, the firſt three ſorts alſo by off ſets from the roots.

By ſeed.—Sow the ſeed in autumn, ſoon after they are ripe, or early in ſpring, in a bed or border of light rich ground, either by broad-caſt on the ſurface, and rake it in lightly, or in ſhallow flat drills ſix inches aſunder, covering it near half an inch deep; the plants will riſe in April or May, give moderate watering in dry weather, and clear out weeds; and in ſummer, and towards autumn, prick out a quantity of the beſt into beds, in rows ſix inches aſunder, where let them remain a year to gather ſtrength, then in autumn or ſpring tranſplant them into the places where they are to remain to flower.

By roots.—The firſt three ſpecies encreaſe by off-ſets of the roots in tolerable plenty, and autumn, winter, or ſpring is the time to ſeparate or divide them, and the ſlips or off-ſets, if ſmall, may either be planted in nurſery-beds for a year, or, if not divided too ſmall, may place them at once in the flower compartments.

GENUS, a fraternity, race, or kind; being an aſſemblage of different ſpecies of plants, reſembling each other in the flower and fruit, or parts of fructification.

The characteriſtical mark of every Genus is the whole of the flower or fructification, and all plants agreeing exactly therein, are ſpecies of the ſame family or Genus; a Genus therefore, may in ſome meaſure be compared to a family, all the relations of which bear the ſame ſurname, although every individual is diſtinguiſhed by a particular ſpecific name; and that by arranging under one generic name, a collection of different ſpecies of plants, which although often ultimately different in their general growth, external port or habit, yet are all found invariably to poſſeſs certain relations in the generical characters of their eſſential parts, the fructification or flower and fruit, that declare them all plants of the ſame family or Genus.

A Genus of plants therefore, however numerous the ſpecies, and different in their general growth, external habit, and duration, are ſuch as agree in all the parts of the flower, which being the only generical characters, a principle now univerſally eſtabliſhed by the Linnæan botany, in no caſe to be departed from. See CHARACTERS. For the *characters* of every Genera or Genus contains a deſcription of each particular part of the flower, as the *Calix*, *Corolla*, *Stamina*, *Piſtillum*, *Pericarpium*, *Semen*, and *Receptaculum*; which being the ſeven parts of fructification, and the moſt eſſential and invariable parts of plants, and conſequently the only parts that can determine the generical characters; and the ſtriking ſingular mark of each of the above parts of the flower, muſt run through all the ſpecies of each reſpective Genus, according to the deſcriptive *characters* in the beginning of every Genus throughout this work; whereby, as afore-mentioned, every ſuch aſſemblage of plants, however few or numerous, ſo agreeing in their fructification, form a Genus.

By arranging every aſſemblage of plants agreeing in their fructification, under one denomination or generical name, renders botany more ſimple and eaſy, which by the ancients was but little underſtood; as with them, al-

moſt every ſpecies was a Genus, and they had no conception of giving one common or general name to a number of plants, which although agreeing in their flower, they could, not diſcover poſſeſſed any thing in common; for the minute parts of the fructification which lay the foundation of our preſent ſyſtems, were then but little known, and as little attended to, as in fact the root: port or external habit of plants, their duration, mode, and times of flowering, and their uſes, both medicinal and oeconomical, formerly furniſhed the ſole characteriſtical diſtinction, all of which however, are vague and indeterminate; but as the fructification is conſtantly the ſame in every reſpective Genera, nothing but theſe parts can with certainty be employed in determining each ſeparate Genus.

Plants and trees of the ſame Genus generally poſſeſs like medicinal powers. As for example, garlick, onion, and leek, belong to the Genus *allium*; cinnamon, camphire, and ſaſſafras belong to the Genus *laurus*; ſouthernwood, wormwood, mugwort, &c. belong to the Genus *artemiſia*.

Trees which belong to the ſame Genus, will alſo all take by grafting or budding upon each other: as for inſtance; pear, apple, and quince, being all of the Genus *pyrus*, take freely upon one another; plum, apricot, cherry, and bird-cherry, &c. being all of the Genus *prunus* alſo, grow upon ſtocks of each other; almond, peach, and nectarine belong to the Genus *amygdalus*, and grow upon one another; currant and gooſeberry belong to the Genus *ribes*, and all the varieties will grow upon each other; as will alſo moſt other trees of the ſame Genus.

The number of known Genera is upwards of twelve hundred, and above twenty-thouſand different ſpecies, beſides varieties; all of which are found growing in their natural ſtate of wildneſs in ſome part of the globe or other, and moſt of them may be naturalized in our gardens, ſome in the open ground, others in the green-houſe and ſtove; but the gardener is not to be intimidated at the ſight of that great number, as if the care of ſo great a family was to fall to his lot; ſince our real valuable cultivated ſpecies fall vaſtly ſhort of that number, yet ſufficient to furniſh our gardens moſt amply, both for oeconomical and ornamental purpoſes.

GERANIUM, Crane's-bill, but commonly called *Geranium*.

It comprizes herbaceous and ſhrubby plants for the pleaſure-ground and green-houſe, obtaining different ſtatures from one or two, to ſix or eight feet high, adorned with broad ſimple leaves, in ſome roundiſh, others heart-ſhaped and oval, ſome intire, and ſome divided, and cluſters of ſmall pentapetalous flowers.

Claſs and order, *Monadelphia Decandria*.

*Characters.*] CALIX, five oval permanent leaves. COROLLA, five oval, or elſe heart-ſhaped, ſpreading petals. STAMINA, ten monadelphous filaments alternately longer, and oblong verſatile antheræ. PISTILLUM, a five-cornered germen, long permanent ſtyle, and five-reflexed ſtigmas. PERICARPIUM, a long fruit, ſhaped like a crane's beak or bill, is quinquelocular, and contains five ſeeds.

There are upwards of fifty ſpecies, and of which the following are the ſorts principally cultivated in the Britiſh gardens.

*Hardy herbaceous kinds.*

[1]GERANIUM, *Pratenſe*.

*Meadow Crow-foot Geranium.*] Geranium with many branchy ſtalks, two or three feet high, garniſhed with divided, target-ſhaped leaves of ſix or ſeven lobes, cut into many wing-like acute parts; and at the top of the ſtalks large blue flowers, two upon each foot-ſtalk.

*Varieties.*]—With white flowers—variegated flowers.

[2]GERANIUM *Sanguineum*.

*Bloody Geranium.*] Geranium with thick, fleſhy, fibrey roots; weak, branchy ſtalks, a foot or more high, garniſhed with divided leaves of five-trifid lobes; and deep red or purple flowers from the ſide of the branches, one upon each foot-ſtalk.

*Varieties.*]—With erect ſtalks—with deeply jagged leaves—and with variegated flowers.

[3]GERANIUM *Phæum*.

*Black flowered Geranium.*] Geranium, with upright, branchy ſtalks, ten or twelve inches high, divided leaves, of five or ſix laciniated lobes, and the branches terminated by blackiſh purple flowers, two upon each foot-ſtalk.

[4]GERANIUM *Nodoſum*.

*Knotty Geranium.*] Geranium, with jointed, branchy ſtalks, ſix or eight inches high, garniſhed with divided leaves of three ſerrated lobes, thoſe below having foot-ſtalks, the upper ones ſit cloſe, and at the ends of the branches, pale purple flowers by twos upon each foot-ſtalk.

[5]GERANIUM *Macrorhizum*.

*Long-rooted, Sweet-ſmelling Geranium.*] Geranium, with a long thick fleſhy root; branchy ſtalks

ſtalks a foot high, garniſhed with five-lobed, ſmooth leaves, the lobes divided into many ſhort crenated ſegments, and the branches terminated by bunches of purple flowers, two upon each foot-ſtalk, and with inflated or bladder-like cups, and very long ſtyle.

[6]GERANIUM *Striatum.*

*Striated Geranium.*] Geranium with many branchy ſtalks near two feet high, garniſhed with five-lobed leaves below, and three-lobed ones above, and white flowers beautifully ſtriated with purple, two upon each foot-ſtalk.

The above ſix ſpecies are very hardy fibrous perennials, durable in root, but annual in ſtalks, &c. which riſe from the root in ſpring; flower in May, June, and July, producing a great profuſion of flowers, each compoſed of five ſmalliſh ſpreading petals. See the *Characters:* and their numbers renders them very conſpicuous, and are ſucceeded by plenty of ſeed in Auguſt and September, which if permitted to ſcatter on the ground, a crop of young plants will naturally riſe in abundance.

Several of them grow naturally in many parts of England, particularly the firſt, ſecond, third, and fourth ſorts; the others are chiefly of foreign growth.

All the ſorts proſper in any common ſoil of a garden.

They may all be employed as ornamental plants for the embelliſhment of the different compartments of the pleaſure-ground, and to encreaſe the variety of the herbaceous collection; and as to their culture, they require only the common care of keeping clean from weeds, cutting down their decayed ſtalks, and digging between them annually in autumn, or any time in winter or ſpring.

They may all be propagated plentifully by ſeed, and by parting their roots.

By Seed.—Sow it in autumn ſoon after it is ripe, or in ſpring in a ſhady border, and rake it in lightly; when the young plants are about three inches high, prick them out in beds five or ſix inches aſunder, giving occaſional waterings, and in autumn or ſpring after, tranſplant them where they are to remain.

By Parting the Roots.—This may be performed any time from October till March, in open weather; do not divide them into too ſmall ſlips; and may plant them at once where they are to remain.

*Green-houſe Shrubby kinds.*

[7]GERANIUM *Zonale.*

*Zone marked, or Horſe-ſhoe Geranium.*] Geranium with a ſhrubby ſtem, branching ſix or eight feet high, garniſhed with roundiſh heart-ſhaped, indented leaves, marked with a purple zonal circle, going quite round, in form of a horſe-ſhoe; and from the upper parts of the branches, cloſe bunches of reddiſh-purple flowers on very long foot-ſtalks.

*Variety.*]—Zone-marked Geranium, with elegantly variegated leaves, of ſingular beauty.

Both theſe varieties of this ſpecies are the ſorts of *Genarium* the moſt commonly cultivated in our gardens, and are both very floriferous moſt part of ſummer; but the variegated ſort is ſingularly ornamental at all ſeaſons with its variegated white and green leaves.

[8]GERANIUM *Capitatum.*

*Capitated Roſe-ſcented Geranium.*] Geranium, with a ſhrubby ſtalk branching irregularly four or five feet high; roundiſh, unequally trilobated, waved, hairy leaves, ſmelling like dried roſes; and purpliſh-blue flowers in a capitated corymbus at the ends of the branches.

[9]GERANIUM *Fulgidum.*

*Fulgid or flaming red Geranium.*] Geranium with a ſhrubby, fleſhy ſtalk, branching a foot or two high, garniſhed with divided, three-lobed, ſmooth, light-green leaves cut on the edges, having the middle lobe largeſt; and flame-ſcarlet flowers in umbellate cluſters from the ſides of the branches.

[10]GERANIUM *Inquinans.*

*Large Mallow-leafed Scarlet Geranium.*] Geranium with a ſhrubby ſtem, branching erectly ſix or eight feet high, garniſhed with roundiſh kidney-ſhaped, thick, bright green leaves, hoary underneath; and bright ſcarlet flowers on long foot-ſtalks from the ſides of the branches.

[11]GERANIUM *Papilionaceum.*

*Papilionaceous flowered Geranium.*] Geranium with a ſhrubby ſtalk, branching ſix or ſeven feet high; large angular, ſharp-pointed, rough leaves, upon long foot-ſtalks; and papilionaceous-ſhaped, finely variegated flowers, in looſe bunches at the ends of the branches.

[12]GERANIUM *Cucullatum.*

*Cucullated or hood-leafed Geranium.*] Geranium with a ſhrubby ſtalk branching ſix or ſeven feet high; roundiſh, indented nervous leaves, hollow in the middle like a hood; and purpliſh blue flowers, in large looſe bunches at the top of the branches.

*Variety.*]—With angular, hooded leaves.

[13]GERANIUM *Vitifolium.*

*Vine-leafed, Balm-ſcented Geranium.*] Geranium with a ſhrubby ſtalk, branching five or ſix feet high, aſcending, lobated, downy leaves, and pale blue flowers in cloſe bunches, on long foot-ſtalks from the axillas of the branches.

[14]GERANIUM *Gibboſum.*

*Gibbous, or gouty-ſtalked Geranium, with Columbine leaves.*] Geranium with a ſhrubby, fleſhy ſtalk, gibbous, or ſwoln at the joints, branching three or four feet high; doubly pinnatifid, fleſhy, ſmooth, oppoſite leaves; and dark purple flowers at the upper parts of the branches.

[15]GERANIUM *Carnoſum.*

*Carnoſe, or fleſhy-ſtalked Geranium.*] Geranium with a ſhrubby, very thick, fleſhy-jointed ſtalk, branching two or three feet high; pinnatifid, laciniated, tthinly-placed leaves; and whitiſh flowers at the top of the branches.

[16]GERANIUM *Betulinum.*

*Birch-leafed Geranium.*] Geranium with a ſhrubby ſtalk branching four or five feet high, oblong, oval, plane, unequally ſawed leaves, and large reddiſh flowers from the ſides of the branches.

[17]GERANIUM *Peltatum.*

*Peltated, or Shield-leafed Geranium.*] Geranium with ſlender, weak, ſhrubby ſtalks, branching two or three feet long; peltated, divided, fleſhy, ſmooth leaves, of five entire lobes; and purple flowers by fours or fives, from the ſides of the branches.

[18]GERANIUM *Acetoſum.*

*Sorrel-taſted Geranium.*] Geranium with a ſhrubby ſtalk, branching five or ſix feet high; oval, fleſhy, ſmooth leaves, taſting like ſorrel; and bluſh-coloured red-ſtriped flowers, by threes or fours, from the ſides of the branches.

*Variety.*]—With ſcarlet flowers.

All theſe ſhrubby *Geraniums* are beautiful ever-greens, being furniſhed with leaves all the year, and moſt of them very floriferous in ſummer, flowering principally in May, June, and July, though ſeveral of the ſorts continue a ſucceſſion of flowers during moſt of the ſummer months, even often until winter. They are moſtly free ſhooters, and ſome of them ſhoot luxuriantly, eſpecially when potted in rich, loamy earth; and the ſhoots of moſt of them are rather ſomewhat ſucculent, and of an herbaceous nature the firſt ſeaſon of their growth, but become more woody as they advance in age: their leaves are moſtly of an orbicularly roundiſh figure, notwithſtanding thoſe of ſome ſorts are divided into lobes, and are from about two to four inches broad, and moſtly foot-ſtalked: the flowers are quinque-petalous, and ſeparately are rather ſmall, but being generally produced in cluſters, are very conſpicuous and ornamental; and in ſeveral of the ſorts are ſucceeded by ſeeds, which falling in the pots, ſometimes many young plants riſe naturally.

They being all natives originally of Africa, are of tender quality; and in their culture here, muſt always be retained in pots, for moving to the ſhelter of a green-houſe, &c. in winter, for they will not live here in the open air during that ſeaſon: they however only require protection from froſt, and being free-ſhooters, ſhould have as much free air as poſſible in open weather, therefore in winter, when placed in the green-houſe, ſhould always be ſtationed towards the front next the windows.

All the ſorts are beautiful furniture for the green-houſe collection, and thoſe with variegated leaves exhibit a delightful contraſt with all the others; and as all of them may be raiſed abundantly by ſeed and cuttings, in the common ground, they may be obtained plentifully in every garden.

The propagation of all theſe ſhrubby ſorts, may be effected abundantly by ſeed, and by cuttings of their branches, though, as they all grow very freely by cuttings, they are moſt commonly propagated by that method; and both methods of propagation may be effected either in the natural ground, or by aid of hot-beds, to bring them more forward.

By Seed.—In April the ſeed may be ſowed either in a bed of light rich earth a quarter of an inch deep, or in pots or boxes of the ſame ſoil, and the plants will come up in ſix weeks; but to forward their growth as much as poſſible, to be ſtrong before winter, it is more adviſeable to ſow in a hot-bed, that is, in March or April ſow it in pots, and plunge them in any hot-bed under glaſſes, and when the plants are two inches high, prick them into ſeparate pots, which if plunged alſo in a hot-bed, will greatly forward the ſeedlings, giving occaſional waterings, and ſhade till rooted, and in June harden them by degrees to the full air.

By Cuttings.—Theſe may be planted in the full ground any time in May, June, and July; or to have them more forward, may plant ſome in pots in March or April, and plung in a hot-bed; in either caſe take off the

the cuttings with a knife, from about four or five to eight or ten inches long, trimming off the leaves from the body of each cutting; obſerving, if the top is very ſoft and herbaceous, it may be ſhortened down to the firm wood, but when robuſt and firm, leave it intire; they may be planted either in the full ground in a ſhady border if in ſummer, or in pots placed in the ſhade, or as above obſerved, may plant them in pots in March, April, or May, and plunged in a hot-bed; or for want of this, may plant them in pots at the time juſt mentioned, and retain them in the green-houſe till May or June: in either mode of planting, put the cuttings two parts out of three into the ground, give a little water directly, and repeat it occaſionally, and the cuttings will ſoon emit roots at bottom, and ſhoots at top, and be fit to tranſplant into ſeparate pots in two or three months.

But the moſt expeditious way of raiſing them by cuttings, to have ſtrong plants by winter, is to forward them in a hot-bed; planting the cuttings in pots, ſeveral in each; in March, April, or May, as above hinted, plunge them either in a dung hot-bed, or in a bark-bed in the hot-houſe, &c. they will quickly take root, and ſhoot at top, when they ſhould be planted out into ſeparate pots, and in June inure them gradually to the full air, and they will branch out at top and make fine plants by October.

With reſpect to their general culture, obſerve as follows:

They proſper in any light rich earth, but grow the moſt luxuriant in a moderate loamy ſoil; though in a light mold, as they ſhoot moderately, are more profuſe in flowers.

They, as before noticed, muſt always be retained in pots for moving to ſhelter in winter, and into the full air in ſummer; in ſummer therefore, about the middle or latter end of May place them in the open air till October, obſerving to give frequent waterings in dry weather, which, in a very hot dry time, will be requiſite almoſt every day. Towards the latter end of October remove them into the green-houſe to remain until May, placing them rather towards the front next the windows, in order to have as much free air as poſſible, otherwiſe they will be apt to draw up weak, and ſometimes the young ſhoots will mould and root off, eſpecially if they are much crowded. During their reſidence here give moderate watering once a week, or ten, or twelve days, as you ſhall ſee neceſſary, and as the ſpring and warm weather advances, give more in proportion; giving it always in moderation whilſt they remain in the green-houſe, eſpecially the fleſhy or more ſucculent kinds, which are apt to take a mouldineſs, and rot with redundant moiſture, or very damp air at this ſeaſon; and with reſpect to freſh air, they of courſe will have it in common with the other exotics of the ſame department. See GREEN-HOUSE PLANTS. Keep all decayed leaves conſtantly picked off, being neceſſary to the health and beauty of the plants; they being very faſt growers, ſhould be ſhifted every year at leaſt, into larger pots; the proper ſeaſon, April and May, being careful to remove them with the balls of earth about their roots, paring off the outſide matted fibres, and clear off alſo ſome of the old earth all around; and ſo pot them again directly in ſome freſh mould, filling up around the ball, and about an inch in depth over its top, with the ſame new ſoil.

*Green-houſe herbaceous kinds.*

[19]GERANIUM *Alchimilloides.*

*Ladies Mantle-leafed Geranium.*] Geranium with herbaceous trailing ſtalks a foot and half long; roundiſh, palmated, hairy leaves, the edges cut into many parts; and whitiſh flowers in cluſters moſt part of ſummer.

*Varieties.*]—With a dark circle in the middle of the leaves—and with blueiſh flowers.

[20]GERANIUM *Odoratiſſimum.*

*Odoriferous, or Sweet-ſcented Geranium.*] Geranium with an herbaceous, ſhort, fleſhy ſtalk, dividing into ſeveral ſhort branchy-heads, garniſhed with heart-ſhaped, ſoft, downy leaves ſtrongly ſcented, and many ſmall white flowers by fours or fives, appearing moſt part of ſummer.

[21]GERANIUM *Groſſularoides.*

*Gooſeberry-leafed Geranium.*] Geranium, with herbaceous, proſtrate ſtalks, branching a foot and half long; ſmall, roundiſh, heart-ſhaped, crenated leaves; and reddiſh flowers on ſhort foot-ſtalks from the ſides of the branches.

[22]GERANIUM *Triſte.*

*Dark-ſpotted night-ſmelling Geranium.*] Geranium with a thick tuberous root, crowned by pinnatifid, finely divided, proſtrate leaves; and among them ariſe bifid, naked, flower-ſtalks, terminated by bunches of yellowiſh dark-ſpotted flowers, ſmelling ſweet in the evening.

[23]GERANIUM

[23]GERANIUM *Prolificum.*

*Prolific or Variable Geranium.*] Of which there are ſeveral varieties.—With thick tuberous roots, of different ſhapes, crowned with leaves; alſo of various forms in the varieties, and among them, the flower-ſtalks directly from the root, terminated by compound umbels of flowers, which in the different ſorts, are red, crimſon, purple, white, &c.

*Varieties of this are:*

*Pinnated Prolific Geranium.*—Having leaves divided in the pinnated manner, in ſome into oval lobes, others into long narrow parts.

*Auriculated Prolific Geranium.*—Having oblong, and ſometimes three-parted leaves, auriculated or eared at each ſide of the baſe.

*Long-leafed Prolific Geranium.*—Having very long ſpear-ſhaped leaves.

*Fleſhy-leafed Prolific Geranium.*—Having oval haſtated fleſhy leaves.

[24]GERANIUM *Lobatum.*

*Lobated Geranium.*] Geranium with a roundiſh, large, fleſhy root, crowned with lobated, hairy crenated leaves, ſhaped like thoſe of vines; and between them naked, truncated flower-ſtalks a foot high, terminated by umbellate cluſters of red, and in ſome ſorts white flowers.

*Varieties.*]—With pinnatifid leaves—with laciniated leaves.

All theſe tender herbaceous *Geraniums*, being natives of Africa, as obſerved of the ſhrubby kinds, muſt always be kept in pots, to move to ſhelter in winter. They grow freely in any light rich garden earth, and may be preſerved through the winter either in a greenhouſe or garden-frame, under occaſional ſhelter of the glaſs lights.

All the tuberous-rooted kinds are remarkably fine ſcented in the night, hence are denominated *Geranium Noctu olens*, or night-ſmelling Geranium.

They may be propagated by ſeed ſowed in ſpring, in pots of light earth, and placed in a hot bed, as directed for the ſhrubby ſorts; they may alſo be propagated by ſlipping their roots in Auguſt or September, or early in ſpring, which, of the tuberous kind, every ſlip of the tubers having an eye or bud, will readily grow.

GERMEN, the ſeed-bud, i. e. the baſe of the piſtillum, is ſituated in the bottom of the flower, and contains the rudiments of the ſeed, and in progreſs of vegetation ſwells, and becomes the ſeed-veſſel.

The Germen in all plants is ſituated in the bottom of the flower; in ſome however, within the corolla, and in others, under its baſe, and which always ſupports the ſtyle and ſtigma, the female organs of generation, whereby modern botaniſts denominate the ſeed-bud or Germen, the *Ovarium* or *Uterus* of plants, which, after its impregnation by the male duſt of the antheræ or male organ falling upon the ſtigma, it becomes a ſeed-veſſel, gradually ripening to maturity, together with the ſeeds contained therein.

GERMINATIO, the Germination or ſprouting of ſeeds, after being committed to the earth.

Different ſorts of ſeeds are longer or ſhorter in germinating, and riſing according to their nature and heat requiſite for each; ſeveral of the graſſes often riſe in one day; creſſes, muſtard, radiſh, rape, and turnip, in from three to ſix or eight days; cucumber, melon, gourd, cabbage, ſavoy, cauliflower, broccoli, beet, ſpinach, lettuce, purſlane, dill, orach, bean, kidney-bean, pea, &c. in from about three or four, to ten or fifteen days; onion, leek, carrot, parſnip, celery, in from about ten or twelve, to eighteen or twenty days; parſley, from about fifteen or twenty, to forty or fifty days; hawthorn, medlar, and ſeveral other hard, bony ſeed, and nuts, are often two years before they germinate; and ſome of the liliaceous plants never riſe at all; obſerving, that in reſpect to the above obſervations of the germination of ſeed, it is principally to be underſtood of ſeeds ſown in ſpring and ſummer, and the more advanced and warm the ſeaſon, the ſooner may the ſeed be expected to riſe.

Seeds alſo preſerve their germinating property ſhorter or longer according to their kinds; ſome do not retain it ſcarcely a year, others for a ſeries of years; particularly many of the papilionaceous tribe: and it is aſſerted, that the ſenſitive plant retains its germinating faculty for thirty or forty years.

Moſt ſeeds germinate the moſt freely when ſowed in ſpring and ſummer; ſome however require to be ſown in autumn, ſoon after they are ripe, otherwiſe they will not ſprout in leſs than a year or two, which ſorts are always hinted in the courſe of the work, under their reſpective articles.

As air and moiſture are the agents of vegetation, it is for want of air that ſeeds which are buried at a very great depth in the earth, either riſe but indifferently or not at all; they frequently however preſerve their germinating

nating property for many years within the bowels of the earth, and it is not unuſual upon a piece of ground being dug up to a conſiderable depth, to ſee it covered with ſeveral plants, which probably have not been ſeen there in the memory of man. Seeds will alſo retain their vegetative virtue for years in the bottom of wells, ditches, ponds, &c. which when cleaned out, and the mud expoſed to the air, various ſorts of plants have riſen therein, that had not appeared thereabouts for a great number of years, by which circumſtances certain ſpecies of plants regarded as loſt, have been accidentally recovered.

GEUM, Avens, or Herb-bennet.

The plants are hardy, herbaceous perennials for the pleaſure-ground, riſing with annual ſtalks about a foot high, terminated by pentapetalous flowers.

Claſs and Order, *Icoſandria Polygynia.*

*Characters* ] CALIX, is monophyllous, cut into ten ſegments alternately ſmaller. COROLLA, five roundiſh petals, long and narrow toward the baſe. STAMINA, numerous filaments, and broad obtuſe antheræ. PISTILLUM, numerous germina collected into a head, and many long, hairy ſtyles, and ſimple ſtigmas—PERICARPIUM, none, numerous ſeeds ſitting on the oblong receptacle placed on the calix.

The principal ſpecies are;

[1]GEUM *Urbanum.*

*Common Avens or Herb-bennet.*] Geum with thick, fibrey, aromatic roots, crowned by large, lyre ſhaped, rough, ſerrated leaves, and upright, round, hairy ſtalks, a foot high, terminated by largiſh yellow flowers, ſucceeded by globular fruit.

This grows wild in woods and by hedge-ſides in England, &c. the root is uſed in medicine, and the young leaves often as a pot-herb.

[2]GEUM *Rivale.*

*Waternodding-flowered Avens.*] Geum, with a thick, fleſhy, very fibrey root, crowned with large lyrated, hairy leaves, and upright ſtalks ten or twelve inches high, terminated by purple flowers nodding on one ſide.

*Varieties.*]—With red flowers—large yellow flowers.

[3]GEUM *Virginianum.*

*Virginian Avens.*] Geum with upright ſtalks a foot and half high, ternate leaves below, thoſe above ſimple, and the ſtalks terminated by ſmall white flowers.

[4]GEUM *Montanum.*

*Mountain Avens of the Alps.*] Geum with a thick, fleſhy, fibrated, creeping root, crowned with leaves compoſed of ſeveral ſmall irregular lobes, terminated by a broad roundiſh one, and ſlender ſtalks near a foot high, garniſhed with narrow ſharp-pointed leaves, and terminated by erect yellow flowers.

*Variety.*] —Dwarf Alpine Avens, with a large golden flower.

All theſe plants have perennial roots and annual ſtalks, which riſe in ſpring, flower in May and June, and ripen ſeeds in July and Auguſt. The plants are hardy, and ſucceed almoſt any where.

They may be introduced in the pleaſure-ground here and there towards the fronts of the flower and ſhrubbery compartments, to encreaſe the variety.

Their propagation is both by ſeed, and by parting the roots. Sow the ſeed in September in a bed or border, and the plants will riſe in ſpring. By parting the roots, it may be done any time, in open weather, from September till March.

GLADIOLUS, Gladiole, Sword-lily, or Corn-flag.

The plants are tuberous-rooted, herbaceous, flowery perennials, of the liliaceous tribe, for the pleaſure-garden, having ſword-ſhaped leaves, and erect annual ſtalks two feet high, adorned with hexapetalous, lily-like flowers.

Claſs and order, *Triandria Monogynia.*

*Characters.*] CALIX, a ſpatha to each flower. COROLLA, ſix oblong petals united at their baſe, the three upper ones incline to each other, and the under ones ſpread open. STAMINA, three filaments, inſerted into every other petal, and oblong antheræ. PISTILLUM, a germen under the corolla, ſingle ſtyle, and trifid concave ſtigma. PERICARPIUM, an oblong, ventricoſe, trigonal, trilocular capſule, and roundiſh ſeeds.

There is but one hardy ſpecies common to the Engliſh gardens, out of which are many eminent varieties.

GLADIOLUS *Communis.*

*Common Gladiole.*] Gladiolus with a round, compreſſed, tuberous, bulb-like root, ſending up long ſword ſhaped leaves, embracing each other at the baſe, between them an erect flower-ſtalk two or three feet high, the top garniſhed with ſeveral largiſh flowers at a diſtance, of different colours in the varieties, and in ſome ranged all on one ſide of the ſtalk, and in others in two ranges, &c.

*Varieties.*]

*Varieties.*]—Common red Gladiolus, with flowers ranged on one ſide of the ſtalk—purple flowers on one ſide of the ſtalk—white flowers on one ſide of the ſtalk—crimſon flowers on one ſide of the ſtalk—red flowers ranged in a double ſeries—white flowers in a double ſeries—broad-leaſed, tall Gladiole, with large purple flowers—broad leaves, and large crimſon flowers. All of which are varieties of one ſpecies, as the ſeed ſaved from one plant often produces them all. They all flower in the end of May, and in June are very conſpicuous and ornamental, and are ſucceeded by plenty of ſeed in Auguſt, and their ſtalks and leaves decay ſoon after; the flowers are moderately large, each of ſix petals. See the *Characters.*

The plants are very hardy, and will flouriſh almoſt any where, and encreaſe greatly by their roots, eſpecially the common red ſort, ſo as often to become troubleſome.

They are proper furniture for the common flower borders, &c. intermixed with other perennials of ſimilar growth, where they will exhibit a very fine appearance when in flower.

The roots are ſold at the nurſeries and ſeed ſhop, and the time to plant them is September, October, and November. They ſhould be taken up every two or three years at the decay of the leaves, to ſeparate the off-ſets, &c.

All the varieties are propagated plentifully by off ſets from the roots, which they emit in abundance every year like tulips and other bulbs. July and the beginning of Auguſt, when the ſtalks and leaves decay, is the time to take up the roots to ſeparate the off-ſets, or tranſplant the roots from one place to another; though if taken up at the proper time, they may be kept out of the ground till October or November, or longer if neceſſary.

They may alſo be propagated by ſeed. Sow it in autumn in a bed or border of light earth, the plants will come up in the ſpring, and when their leaves decay in ſummer, tranſplant them into nurſery-beds to remain a year or two, till of due ſize to flower; then tranſplant them where they are to remain.

GLEDITSIA, Triple-thorned Acacia.

There is but one ſpecies, a large deciduous tree for ornamental plantations, adorned with beautiful pinnated foliage, and amentaceous male and hermaphrodite flowers on the ſame plant, and females on ſeparate trees.

Claſs and order, *Polygamia Dioecia.*

*Characters.*] CALIX, male flowers collected in a long compact cylindric katkin, terminated by the hermaphrodites, each having a three-leafed cup, and female flowers on ſeparate plants, having a five-parted calix. COROLLA, three roundiſh petals in the males and hermaphrodites, and five long acute ones to the females. STAMINA, ſix filaments and oblong antheræ. PISTILLUM, a broad germen longer than the corolla, ſhort reflexed ſtyle, and thick ſtigma. PERICARPIUM, a large flat pod, having tranſverſe partitions, each diviſion replete with pulp, and one hard round ſeed.

The ſpecies is;

GLEDITSIA *Triacanthos.*

*Triple-thorned Acacia.*] Gleditſia, with an upright trunk, riſing thirty or forty feet high, branching out regularly, and having the ſtem and branches armed with many long triple thorns, and cloſely garniſhed with doubly pinnated leaves, each leaf conſiſting often of near two hundred ſmaller leaves or foliola; and amentaceous greeniſh flowers from the ſides of the branches, ſucceeded by broad ſeed-pods near a foot and half long.

*Variety.* With fewer thorns, ſmaller leaves, and oval pods.

Theſe trees have ſingular beauty in ſummer, when cloathed with their large, long, pinnated foliage, which ſpread open delightfully in fine weather, but rather droop and contract at the approach of bad. They flower in July, but being of an herbaceous colour, make but little appearance; but their large ſeed-pods have a fine effect, though theſe do not often attain perfection in England.

They are natives originally of America, but grow freely here in any ſituation.

Both the varieties are fine furniture for all ornamental plantations and ſhrubbery-work, &c. and have an admirable effect placed ſingly in large opens of graſs ground.

*Propagation.*

Their propagation is by ſeeds, which are annually procured from America by the ſeedſmen: ſow them in ſpring in a warm border of light earth half an inch deep, giving occaſional waterings in dry weather, and the plants will riſe the ſame ſeaſon, and by ſpring following, the largeſt will be fit to tranſplant, and in ſpring after all the reſt, planting them in nurſery-rows, one foot by two aſunder, to remain till a yard or two high.

GLOBULARIA, Globular blue Daiſy.

The plants are herbaceous, flowery perennials,

nials, producing annual ſtalks from about ſix, to ten, or twelve inches high, ſurmounted by globular heads of blue flowers.

Claſs and order, *Tetrandria Monogynia.*

*Characters.*] CALIX, a general cup, containing many florets, each having a monophyllous cup, five-parted at top. COROLLA, the general flower conſiſts of many florets collected into a globular head, each floret is monopetalous, tubular, and five parted at the brim. STAMINA, four filaments, and incumbent antheræ. PISTILLUM, an oval germen, ſingle ſtyle, and obtuſe ſtigma. PERICARPIUM, none, one ſeed to each floret, lodged in its calix.

There is but one ſpecies common to our gardens, viz.

GLOBULARIA *Vulgaris.*

*Common Globularia.*] Globularia, with broad, thick, radical leaves, three-parted at the ends; upright ſtalks from about ſix, to ten, or twelve inches high, garniſhed with ſpear-ſhaped leaves; and the top crowned by a globular head of fine blue flowers, compoſed of many florets in one general cup. See the *Characters.*

It flowers in June, and makes a good appearance towards the fronts of the flower-borders, but flowers beſt in a ſhady moiſt ſituation.

The propagation is effected by parting the roots in September.

GLORIOSA, Superb Lily.

It is a tender, herbaceous, flowering perennial for the ſtove, producing trailing, annual ſtalks ſeveral feet long and hexapetalous liliaceous flowers.

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX, none. COROLLA, ſix oblong, ſpear-ſhaped, waved, extremely long petals, wholly reflexed back. STAMINA, ſix ſpreading filaments, and incumbent antheræ. PISTILLUM, a globular germen, ſlender inclinated ſtyle, and triple ſtigma. PERICARPIUM, an oval, trilocular capſule, and many globular ſeeds.

There is but one ſpecies, viz.

GLORIOSA *Superba.*

*Superb Lily.*] Glorioſa, with a thick, fleſhy, tuberous root; ſending forth from its centre declinated round ſtalks, growing eight or ten feet long, garniſhed with very long, narrow leaves, running out to a point, terminated by a long tendril; and from the upper part of the ſtalks, large flame-coloured drooping flowers of ſix widely ſpreading reflexed petals.

It flowers in June and July, and is of admirable beauty, hence it derives the name *Glorioſa*, or Superb Lily.

This plant being a native of Ceylon and Malabar, very warm countries, requires the protection of the hot-houſe here, ſo muſt be kept in pots of light earth, and placed conſtantly in that department. The flower-ſtalks ſhoot forth in March or April, which being long, and of trailing growth, muſt have tall ſticks placed for their ſupport: water them frequently in ſummer during their growth, but give very little after their flowers and ſtalks decay.

The time for removing the roots either for encreaſe, or to tranſplant into freſh earth, &c. is, in autumn, when their ſtalks decay, or early in ſpring before they begin to ſhoot.

It is propagated by off-ſets of the roots, which they yield in tolerable plenty, and may be ſeparated any time after the ſtalks decay, or in ſpring before new ones ariſe.

GLYCINE, knobbed rooted Liquorice Vetch.

Of this Genus, is one ſhrubby climber, uſually cultivated for the ſhrubbery, adorned with noble pinnated foliage, and fine papilionaceous blue flowers.

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX, is monophyllous and bilabiated. COROLLA, is papilionaceous, having a heart-ſhaped vexillum, ſmall, oblong, oval wings; and narrow ſickle-ſhaped keel. STAMINA, ten diadelphous filaments, and ſingle antheræ. PISTILLUM, an oblong, germen, ſpiral ſtyle, and obtuſe ſtigma. PERICARPIUM, an oblong pod, and kidney-ſhaped ſeed.

The ſpecies commonly cultivated in our gardens is;

GLYCINE *Frutiſcens.*

*Shrubby Glycine, commonly called Carolina Kidney-bean-tree.*] Glycine, with ſhrubby climbing ſtalks twining round any ſupport, fifteen or twenty feet high, adorned with pinnated leaves of three pair of folioles, terminated by an odd one, and from the axillas, cluſters of large blueiſh-purple flowers, ſucceeded by long pods, like thoſe of the climbing kidney-beans.

It flowers in July and Auguſt, but the ſeeds do not ripen here.

This is an elegant ſhrubby climber, ornamental both in foliage and flowers, and merit a place in the beſt ſhrubberies.

It is eaſily propagated by ſeed, and by layers.

By Seed. This is imported annually from America. Sow it in ſpring in a bed of light earth, half an inch deep; give the young plants occaſional protection of mats from froſt the following winter; in ſpring plant out ſome of the largeſt in nurſery rows, and in ſpring after put out the remainder.

By Layers. In autumn lay down the young ſhoots in the earth, and by that time twelve-month they will be rooted and fit to tranſplant.

GLYCYRRHIZA, Liquorice.

This genus furniſhes one valuable herbaceous perennial for medical uſe, producing annual ſtalks a yard or more high, pinnated leaves, and papilionaceous flowers.

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX, is monophylous, tubular, and bilabiated. COROLLA, is papilionaceous, having a long, erect vexillum, oblong wings, and dipetalous carina. STAMINA, ten diadelphous filaments, and roundiſh antheræ. PISTILLUM, a ſhort germen, ſlender ſtyle, and riſing obtuſe ſtigma. PERICARPIUM, an oval or oblong pod, and kidney-ſhaped ſeed.

[1]GLYCYRRHIZA, *Glabra.*

*Smooth-podded Glycyrrhiza, or Common Liquorice.*] Glycyrrhiza, with a long, thick, creeping root, ſtriking ſeveral feet deep into the ground; upright, firm, herbaceous ſtalks annually, three or four feet high, garniſhed with winged leaves of four or five pair of oval lobes, terminated by an odd one; and from the axillas erect ſpikes of pale blue flowers in July, ſucceeded by ſhort ſmooth pods.

The root of this is the uſeful part, which is replete with a ſweet, balſamic, pectoral juice, much uſed in all compoſitions for coughs and diſorders of the ſtomach.

[2]GLYCYRRHIZA, *Echinata.*

*Echinated or Prickly-podded Liquorice.*] It is nearly like the common ſort, only the ſeed-pods are prickly.

Both theſe ſpecies are very hardy perennials, but the firſt ſpecies is the ſort commonly cultivated for uſe, its roots being fuller of juice and ſweeter than the other.

The roots are perennial, but the ſtalks riſe in ſpring, and decay in autumn.

They delight in a deep light ſoil, in which the roots will run down three or four feet deep, and attain a large ſize if permitted to ſtand three or four years; and from the main root ſmaller ones run off horizontally, and from theſe horizontal roots, that run near the ſurface, cuttings for ſets or young plants are taken for propagation, which are generally procured at the time when the Liquorice is taken up for uſe, being fit in three years after planting.

Where large quantities are required for ſale, they may be cultivated in fields, as practiſed in many parts of England; vaſt quantities are alſo raiſed in the kitchen-gardens about London, where, by the richneſs and depth of the ground, the roots attain their utmoſt perfection in length and bulk.

The length and thickneſs of the roots is a principal conſideration to the planter, as they are always ſold by weight.

*Propagation and Culture.*

Their propagation is, as above obſerved, effected by cuttings of the ſmall roots iſſuing from the ſides of the main ones, near the ſurface of the earth, dividing them into lengths of ſix or eight inches, each having one or more good buds or eyes; and the proper ſeaſon for procuring the ſets for planting is, any time, in open weather, from October till March, though from the middle of February, till the middle of March, is rather the moſt ſucceſsful ſeaſon for planting.

An open ſituation is the moſt ſuitable for a plantation of theſe plants.

Particular regard ſhould alſo be had to the ſoil; it ought to be of a light, looſe temperature, and three or four feet deep if poſſible, for the roots of the Liquorice will arrive at that depth and more, and the longer the roots the more valuable they are for ſale by weight.

Having fixed on the ground, let it be trenched three ſpades deep, if the depth of proper ſoil will admit, then having your ſets ready, proceed to plant them by line and dibble, planting the ſets a foot diſtance in each row; putting them perpendicular into the ground, with the tops about an inch under the ſurface, and let the rows be a foot and half aſunder; though the London gardeners ſeldom allow more than twelve inches between row and row; theſe gardeners alſo ſow a crop of onions on the ſame ground the firſt year, which, as the onions root but ſlender, and ſpread but little at top, may be done without any detriment to the Liquorice, nor that to the onions, as it does not riſe above ten or twelve inches high the firſt ſummer; obſerving to keep the ground clean from weeds during that ſeaſon by hoeing; and if there is a crop of onions, uſe the ſmall hoe,

cutting

cutting out the onions to four or five inches diſtance, clearing away ſuch as grow immediately cloſe to the Liquorice plants; and when the onions are gathered, give the ground a thorough hoeing with a large hoe, to looſen the ſurface and deſtroy all weeds effectually; and in autumn cut down the decayed ſtalks of the Liquorice, and nothing more is neceſſary to be done till ſpring; when, in February or March give a ſlight digging between the rows, and during ſpring and ſummer, keep down all weeds by broad-hoeing; and in autumn when the ſtalks are in a decaying ſtate, cut them down to the ſurface of the earth as before obſerved. The ſame work is to be repeated every ſucceeding year: that is, ſlightly ſtir the ground in ſpring, keeping down all weeds in ſummer in hoeing, but after the firſt or ſecond year, the ſtalks of the Liquorice will ſhoot ſtrongly, and ſoon cover the ground, ſo as greatly to retard the growth of weeds.

Likewiſe, every autumn, about October, when the ſtalks begin to decay cut them down to the ground and clear them off.

In three years after planting, the roots of the Liquorice will be fit to take up, and the proper ſeaſon for this is, any time from the beginning of November till February, for it ſhould neither be taken up before the ſtalks are fully decayed, nor deferred till late in ſpring, otherwiſe the roots will be apt to ſhrivel and diminiſh in weight.

The method of taking it up is by trenching the ground, beginning at one end, and open a trench cloſe to the firſt row three or four ſpades deep, or to the depth of the roots, at which work three or four ſpadeſmen are generally employed at each trench; one goes on with the top ſpit, a ſecond with the next ſpit, another with a third ſpit, and the fourth ſpadeſman commonly gets to the bottom of the roots, having a mattock to aſſiſt him occaſionally to clear them, ſo as he takes them up, throws them on the top of the undigged ground; and in this manner proceed row and row, till the whole plantation is taken up.

The ſmall ſide-roots are trimmed off, and the beſt divided into lengths for freſh ſets, and the main roots are tyed in bundles ready for ſale.

It is of advantage to ſell them as ſoon as poſſible after they are taken up, before they looſe much of their weight.

They are ſold to the druggiſts, from about twenty to thirty or forty ſhillings per hundred weight, and an acre of ground has produced three thouſand and upwards, which has been ſold for more than ſixty pounds, but the price is commonly in proportion to the goodneſs of the roots.

GNAPHALIUM, Cudweed, Goldylocks Eternal-flower, Everlaſting, &c.

This genus conſiſts of herbaceous and ſmall under-ſhrubby flowering perennials for the open ground and green-houſe, of different ſtatures, from ſix or eight inches, to four or five feet, adorned moſtly with white hoary leaves, and terminated by compound flowers in corymboſe cluſters, remarkable for retaining their beauty for years after being gathered.

Claſs and order, *Syngeneſia Polygamia Superflua.*

*Characters.*] CALIX, compound flowers, having a roundiſh, imbricated, permanent, general cup. COROLLA, many hermaphrodite and female florets in one general cup, the females have no petals. STAMINA, five filaments, and cylindric antheræ. PISTILLUM, an oval germen, filiform ſtyle, and bifid ſtigma. PERICARPIUM, none: the calix is permanent and gloſſy; and the ſeeds are ſingle under each floret, and crowned with down.

The moſt material ſpecies in the Engliſh gardens, are the following three hardy, and three tender kinds.

*Hardy Kinds.*

[1]GNAPHALIUM, *Margaritaceum.*

*Pearly-white Eternal-flower.*] Gnaphalium with creeping, very ſpreading roots, crowned with broad, ſpear-ſhaped, white, hoary leaves; herbaceous, thick, woolly ſtalks, a foot and half high, branching out upward, garniſhed with long, acute-pointed, white, woolly leaves placed alternate, and each branch terminated by a corymboſe cluſter of yelloviſh flowers, in large, prickly, white permanent cups appearing in June and July, are very ornamental; and which if gathered in a dry day ſoon after they appear, they will retain their beauty ſome years, hence it is often called everlaſting, or eternal flower.

This ſpreads and multiplies exceedingly by its creeping roots.

[2]GNAPHALIUM, *Plantaginifolium.*

*Plantain-leafed Cudweed*] Gnaphalium, with large oval, woolly, radical leaves; decumbent, running ſhoots rooting in the ground, and herbaceous, ſimple ſtalks ſix or eight inches high, terminated by a corymbus of white flowers in June, July, &c.

This alſo multiplies greatly by its off-ſet-runners rooting in the earth.

[3]GNAPHALIUM, *Stæchas.*

*Narrow-leafed Stæchas.*] Gnaphalium, with a ſhrubby ſtalk, branching into long, ſlender ſtalks three feet high, covered with a white bark, narrow leaves, hoary underneath, and all the branches terminated by compound corymboſe cluſters of yellow flowers appearing from May or June, to the end of ſummer, and which, if gathered dry, will continue ſome years.

*Tender Kinds.*

[4]GNAPHALIUM, *Orientale.*

*Oriental Goldy-locks, or Immortal Flower.*] Of which there are the following *Varieties.*

*Dwarf Oriental Goldy-locks.*—Hath a ſhort, ſhrubby ſtalk, a few inches high, branching out into many heads, garniſhed with narrow, woolly leaves, and from the heads, flower-ſtalks ſix or eight inches long, terminated by a compound corymbus of golden yellow flowers.

*Narrow-leafed, Oriental, Immortal Flower.*—Hath ſhrubby ſtalks, branching two or three feet high, long, ſpear-ſhaped woolly leaves, and the branches terminated by a compound corymbus of golden yellow flowers—likewiſe a variety with ſilvery white flowers.

*Broad-leafed Oriental Immortal Flower.*—Hath broad, ſpear-ſhaped, white, woolly radical leaves; woolly ſtalks branching a foot and half high, adorned with ſpear-ſhaped, woolly leaves; and the branches terminated by compound cluſters of golden yellow flowers.

Theſe three varieties of *Gnaphalium Orientale*, flower in May and June, and often continue in ſucceſſion great part of ſummer; and if thoſe of all the ſorts are gathered before they are too ripe, in a dry day, they remain beautiful for many years; hence the name Immortal flower, &c.

[5]GNAPHALIUM, *Orodatiſſimum.*

*Sweet-ſcented Eternal Flower.*] Gnaphalium with ſhrubby-winged ſtalks, branching irregularly a yard high, oblong, blunt leaves hoary underneath, and decurrent, having a wing or border running along the ſtalk or branch, and the branches terminated by compound, cloſe, corymboſe cluſters of bright gold-coloured flowers, changing to a dark yellow.

[6]GNAPHALIUM, *Arboreum.*

*Tree Gnaphalium.*] Gnaphalium, with a woody ſtem, branching four or five feet high, narrow ſeſſile leaves, with revolute borders, ſmooth on their upper ſide, and roundiſh bunches of pale yellow flowers.

The flowers of all theſe ſpecies of *Gnaphalium* are compound, having many ſmall florets, common to one general cup or calix, which is perſiſtant, dry, and ſhining, (ſee the *Characters*) and generally all terminate the branches in a compound, compact corymbus, and all of which poſſeſs the ſingular property of retaining their beauty in their proper colours for ſeveral years, if kept dry and clean.

Moſt of the ſorts come into flower about June, and continue great part of ſummer.

The firſt three ſorts are hardy, and may be employed as plants of ornament, in any compartment of the pleaſure-ground, for they will thrive in any ſoil and ſituation; the two firſt of which encreaſe exceedingly by their roots, and rooting ſhoots, which may be taken off in autumn or ſpring, and planted where they are to remain; and the third ſort being ſhrubby, is propagated by planting ſlips or cuttings of its ſhoots any time in ſpring or ſummer, in a ſhady border.

But the fourth, fifth, and ſixth ſpecies are ſomewhat tender, and ſome ſhould be kept in pots, to be ſheltered in a green-houſe or garden-frame, in winter; others may be planted in the full ground in a warm, dry ſituation, eſpecially the oriental kind, and varieties; alſo, the ſweet-ſcented ſort, for theſe two ſpecies will ſtruggle tolerably through an ordinary winter, and make a pretty appearance during the ſummer months. All theſe being ſhrubby, are propagated by ſlips or cuttings of their ſhoots, any time in ſpring or ſummer; planted either in borders of natural earth, and covered with hand-glaſſes till rooted, or by planting them in pots, and place them in a hot-bed, which will bring them forwarder.

GOMPHRENA, Globe Amaranthus.

Of this genus there is one tender, very ornamental, annual, and varieties, of two or three feet ſtature, adorned with ſimple entire foliage, and globular heads of aggregate florets.

Claſs and order, *Pentandria Digynia.*

*Characters.*] CALIX, many florets, collected into a capitulum or head, each having a diphyllous, coloured, permanent cup. COROLLA, numerous, ſmall, erect florets, collected into a cloſe head; each floret five-parted at the brim, and has a five-parted nectarium. STAMINA, five ſcarce diſcernible filaments. PISTILLUM, in each floret an oval germen, two ſmall ſtyles, and ſimple ſtigmas. PERICARPIUM, a ſmall roundiſh capſule, ſucceeding each floret, and one roundiſh ſeed.

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The ſpecies is;

GOMPHRENA, *Globoſa.*

*Globoſe Gomphrena, commonly called Globe Amaranthus.*] Gomphrena, with an upright ſtalk, branching erectly all around, two or three feet high; the branches by pairs oppoſite, each pair croſſing the other; garniſhed with oval-lanceolate, oppoſite leaves, and every branch and ſide-ſhoot, terminated by a cloſe globular head of flowers, compoſed of numerous very ſmall ſtarry florets, cloſely covered with dry ſcaly calices, placed imbricatum, perſiſtent, and beautifully coloured, and in which conſiſts the beauty of the flowers, which are of different colours in the varieties.

*Varieties are.*] Globe amaranthus, with purple heads—with white or ſilvery heads—with red heads—with ſtriped or variegated heads—with ſpiked heads.

All theſe varieties are very floriferous and ornamental, they divide into many branches, each of theſe ſending forth many axillary foot-ſtalks, each ſupporting a round head of flowers, accompanied by two leaves, appearing from June till November, ſucceeded by plenty of ripe ſeeds.

They are tender plants of the annual tribe, riſing from ſeed in ſpring, and totally periſh at the approach of winter.

The flowers themſelves are ſeparately ſo ſmall, and cloſely covered with the ſcaly calices, that they ſcarcely appear; ſo that the numerous, cloſely placed, ſcaly coverings, being of a dry, firm conſiſtence, coloured and glittering, collected into a compact, round head, the ſize of an ordinary cherry, are very conſpicuous, and make a very ornamental appearance.

Theſe flowers, if gathered when at full growth, and placed out of the ſun, will retain their beauty ſeveral months.

The plants being natives of India, are of tender quality here, requiring aid of artificial warmth to raiſe and forward them to a proper ſtate of growth, ſo as to flower in perfection and produce ripe ſeed; therefore, they are raiſed in hot-beds under glaſſes in ſpring, and retained there till June, for they will not bear the open air here till the middle, or latter end of that month.

They are commonly cultivated in pots, and placed to adorn fore-courts, and other conſpicuous compartments, in aſſemblage with other curious annuals, though they may alſo be planted out into the open borders, &c.

*Propagation and Culture.*

All the varieties are propagated only by ſeed ſowed annually in March, or beginning of April, in hot-beds under glaſſes; as for *amaranthus*, and the *celoſia criſtata*, or *cocks-comb*.

The ſeeds being cloſely inveloped in their ſcaly, chaffy covering, it ſhould be pulled to pieces and ſeparated as well as poſſible, and having the hot-bed ready as directed for the amaranthus and other tender annuals, ſow the ſeed either in the earth of the bed, covering it a quarter of an inch deep with fine mold, or may be ſowed in pots, and plunge them in the hot-bed, as ſhall be convenient: the plants will come up in a week or ten days, and when they are an inch high, they ſhould be pricked down either in the ſame bed, if of good heat, or in a freſh one, three or four inches diſtance, giving water, occaſional ſhade, and freſh air. Here let them grow three weeks or a month, when they will be conſiderably encreaſed in growth, and ſhould be tranſplanted into another hot-bed, at ſix or eight inches diſtance, or may now plant them in pots, (thirty-twos) and plunge them in the hot-bed, under a deep frame, to draw them up tall, where they may grow till June, then ſhifted into larger pots, obſerving at each removal, to give water and ſhade occaſionally till rooted, and give freſh air daily at the upper end of the lights; and frequent waterings, managing them in every reſpect as directed for the amaranthus and cocks-comb, and other tender annuals. See ANNUAL PLANTS. And in June innure them gradually to the full air, and if any are not potted, tranſplant them therein with balls about their roots; and towards the latter end of that month may remove them into the full air entirely, at which time alſo, if you intend to plant any in the borders, ſhould then tranſplant them from the hot-bed with balls about their roots.

During ſummer, thoſe in the pots ſhould be watered three or four times a week in dry weather; towards Auguſt a pot or two of each variety for ſeed, ſhould be placed in a frame or glaſs-caſe, to be occaſionally ſheltered from exceſſive wet and cold nights, whereby they will ripen the ſeeds more effectually.

GOSSYPIUM, Cotton Plant.

This genus conſiſts of ſome herbaceous annuals, and ſhrubby perennials of the ſtove, riſing from two to five or ſix feet high, having divided leaves, and pentapetalous flowers, ſucceeded

ſucceeded by capſules filled with ſeeds, wrapped up in that fine downy matter called cotton.

Claſs and Order, *Monadelphia Polyandria.*

*Characters.*] CALIX, is double, the outer one large and half-trifid, the inner one cup-ſhaped, and indented at the brim. COROLLA, five heart-ſhaped, plane petals. STAMINA, numerous united filaments, and kidney-ſhaped antheræ. PISTILLUM, a roundiſh germen, a columnous ſtyle, and four thick ſtigmas. PERICARPIUM, a roundiſh, acuminated capſule, of three or four cells, filled with oval ſeeds, and fine down, called cotton.

The plants are cultivated in ſome of our hot-houſes for curioſity, and for which a plant or two of a ſort is ſufficient.

The chief ſpecies are;

[1]GOSSYPIUM, *Herbaceæ.*

*Common herbaceous Cotton.*] Goſſypium, with an herbaceous, ſmooth ſtalk, two feet high, branching upwards; five-lobed ſmooth leaves, and yellow flowers from the ends of the branches, ſucceeded by roundiſh capſules full of ſeed and cotton.

[2]GOSSYPIUM, *Hirſutum.*

*Hairy American Cotton.*] Goſſypium with hairy ſtalks branching laterally two or three feet high; palmated, three and five-lobed, hairy leaves, and yellow flowers, ſucceeded by large oval pods, furniſhed with ſeeds and cotton.

[3]GOSSYPIUM, *Barbadenſe.*

*Barbadoes Shrubby Cotton.*] Goſſypium, with a ſhrubby ſtalk, branching four or five feet high, three-lobed ſmooth leaves, glandulous underneath; and yellow flowers, ſucceeded by oval pods, containing ſeeds and cotton.

[4]GOSSYPIUM, *Arboreum.*

*Tree Cotton.*] Goſſypium, with an upright woody perennial ſtalk, branching ſix or eight feet high; palmated, four or five-lobed, ſmooth leaves, and yellow flowers, ſucceeded by large pods filled with ſeeds and cotton.

The firſt three ſpecies are principally annual, riſe from ſeed in ſpring, and periſh root and ſtalk in autumn, more eſpecially the firſt and ſecond ſorts.

But the fourth ſort is perennial in root and ſtalk.

It is theſe plants which produce the cotton for uſe, and in warm countries they are cultivated in great quantities in fields, as we do corn, particularly the annual ſorts; but the firſt ſpecies is the moſt commonly cultivated.

The pods are ſometimes as large as middling apples, cloſely filled with the cotton, ſurrounding the ſeed.

They are natives of the warm parts of America, ſo that if a plant or two of each is required here for variety, they muſt be raiſed and continued in the ſtove, where they will flower, and produce pods furniſhed with ſeeds and cotton.

Their propagation is by ſeed ſown in pots of light earth in ſpring, plunging them in the bark-bed, and when the plants are an inch or two high, prick them in ſeparate pots, which plunge alſo in the bark bed, and retain them always in the ſtove.

GRAFTING, a mode of propagation, particularly uſed for moſt ſorts of fruit-trees, being the only certain method to continue the approved varieties in their kind, and is alſo uſed for propagating many ſorts of flowering-ſhrubs and timber-trees.

This mode of propagation is, the taking a graft or ſhoot of one tree, and inſerting or ingrafting it into the ſtem or branch of another, and they both uniting as one, the graft ſhoots forth into branches and becomes the tree, producing flowers and fruit exactly the ſame as that of the tree from whence it was taken; and the grafting for all ſorts being always performed in ſpring, from about the end of January, until that of March, the grafts unite firmly the ſame ſeaſon, ſhoot forth in ſummer, ſo as by autumn, of the ſame year, they will often form ſhoots or young branches, from about a foot, to two or three long, and in ſome ſorts will bear fruit the ſecond or third year.

Hence the great utility of Grafting is to propagate any approved variety of choice fruit-trees, &c. whereby theyare with certainty preſerved perfect in their kinds; and trees of all ſorts may alſo be continued and multiplied by the ſame method of propagation: for as juſt hinted, the grafts or cions, i. e. cuttings of young ſhoots, being taken from any particular tree or ſhrub, and grafted upon others of the ſame genus; as, for inſtance, a golden-rennet apple upon a crab or any other kind of apple-ſtock, raiſed from ſeed or otherwiſe, the graft ſhoots up and becomes the tree, and bears golden-rennets the ſame in every reſpect as that of the tree from whence the cions were taken; ſo that Grafting is the principal certain method to continue any approved varieties: for although the different varieties of fruit have been accidentally obtained from ſeeds, yet ſow the ſeeds of the fineſt ſorts, they will

degenerate

degenerate ſo greatly by ſeeds, that out of hundreds ſo raiſed, there probably may not be one tree which produces fruit like the original, or perhaps that poſſeſs any good quality for eating; and the ſame is obſervable of all other fruits, ſo variable is ſeedling fruit-trees; and hence it was, that the ancients, finding there was no certainty in continuing and multiplying the approved varieties of fruit from ſeed, they invented the art of Grafting, and inoculation, both of which proving effectual and invariable, is ſtill continued in the propagation of almoſt all the varieties of every genus of fruit-trees; for whatever be the ſtock or tree, on which you perform the Grafting, if of the ſame genus, the graft will grow freely, and always remain unalterably the ſame; that is, always producing the ſame ſort of fruit as its parent tree, which renders graſting of general utility in gardening, but more particularly for fruit trees; though ſome ſorts, as vines, figs, quinces, mulberries, currants, gooſeberries, &c. are moſt commonly propagated by layers and cuttings of their branches, which ſtriking root freely in the ground, ſhoot up into ſtem and branches, and, like the grafts, produce fruit alſo exactly the ſame as the tree from whence they were taken. But as moſt other ſorts of fruit-trees ſucceed much better by Grafting and budding, that method is commonly practiſed in their propagation; many curious varieties of ornamental trees and ſhrubs may alſo be propagated with certainty by Grafting and budding, particularly all the ſtriped and variegated-leafed varieties, as alſo all other varieties of any particular ſpecies.

By Graſting alſo, different ſorts of fruit and flowers of the ſame genus, may be made to grow upon one tree; as for inſtance, grafts of ſeveral ſorts of apples may be ingrafted into the ſame tree, each graft branching out, produces fruit in every reſpect like that of the tree from whence they were cut; by the ſame rule you may alſo, for curioſity, have ſeveral ſorts of pears on one tree, alſo apples and pears on the ſame tree or branch, as being all of the ſame fraternity or genus, the ſame is alſo obſervable of all other trees of the ſame genus or family; for it is in but very few inſtances that trees of a different genus will grow upon each other, by Grafting or budding, though the almond, peach, and nectrine, being all of the genus *Amygdalus* will grow upon the *Prunus* or plum-tree, and which is the common ſtock on which theſe kinds are uſually worked, but theſe kinds excepted, all other kind of fruits ſucceed beſt upon ſtocks or trees of their own family.

*Of the proper Stocks, &c. to graft upon.*

With reſpect to the ſtocks, or trees, on which to perform the operation of Grafting, it is moſt commonly performed upon the ſtems of young trees, raiſed from the ſeed, layers or cuttings for that purpoſe; though they are the moſt commonly raiſed from ſeed, except in particular caſes; and when deſigned for the purpoſe of Grafting upon, are always denominated ſtocks, which, when from about the ſize of a gooſe quill, to an inch or more in diameter, are of due ſize for receiving the grafts; obſerving, that previous to the inſertion of the grafts, the head of each ſtock muſt be cut off, from within about ſix inches to as many feet of the ground, according whether the tree is deſigned for a dwarf, or a half, or full ſtandard; and one graft is commonly inſerted into each ſtock, though in large ſtocks ſometimes two or more grafts are inſerted: remarking, that if intended to raiſe dwarf-trees, the ſtock, at the time of Grafting, muſt always be headed down within a few inches of the ground, for the inſertion of the graft; and for ſtandards, the heading of the ſtock for the inſertion of the graft may either be near the ground, and train up one of the firſt ſhoots from the graft to form a ſtem; or if you deſign the ſtock to form the ſtem, as is common for ſtandard cherries, &c. it muſt be ſuffered to grow ſix or ſeven feet high, ſo head it at four, five, or ſix feet height for the reception of the grafts.

But Grafting is alſo performed upon old trees, or ſuch as already bear fruit, particularly when it is deſigned to change the ſorts, or have more than one ſort on the ſame tree; or to renew the whole, or any particular branch of a tree: in either caſe, inſerting the graft into the upright branches, ſometimes heading the branches down for its reception, and ſometimes inſerting it into their ſides without heading them down. But as there are five or ſix different methods of Grafting, each is exhibited below.

The particular ſorts of ſtocks proper for Grafting each ſort upon, is fully exhibited under each reſpective article as they occur in the courſe of this work.

Let it however be remarked, both in Grafting and inoculation, that, as above noticed, the different varieties of each genus,

whether

whether fruit-trees, foreſt-trees, ſhrubs, &c. muſt always be grafted upon ſtocks or trees of the ſame family, or ſuch that are very near kindred by the *characters* of their flower, otherwiſe they will not ſucceed; as for example, apples ſhould be grafted only upon apple-ſtocks, i. e. young trees raiſed from the kernels of any kind of apple whatſoever: they will however alſo grow upon pear and quince ſtocks, as being all of the ſame genus; but they always ſucceed beſt upon any kind of apple-ſtocks, raiſed either from the kernels of the wild crab, or thoſe of any of the cultivated apples. Pears likewiſe ſucceed beſt upon pear-ſtocks, or to have them dwarfs, are grafted upon quince-ſtocks. Plums ſhould be grafted principally upon plum-ſtocks, though they will grow upon thoſe of cherries, and cherries upon theſe, they being all of the ſame genera; but each ſucceed conſiderably beſt upon their own ſtocks. Cherries ſhould therefore likewiſe be grafted upon cherry-ſtocks: but for particulars of each kind, ſee the ſeveral articles under their reſpective genera.

As to the method of raiſing the different ſorts of ſtocks for Grafting, it is moſt commonly by ſeed, kernels, or ſtones of the reſpective fruits, ſowed in autumn or ſpring, in beds of good earth, covering them with mold about an inch or two deep, according to their ſorts or ſizes; they will come up early in ſummer, and be fit to plant in nurſery rows, two feet aſunder, in winter and ſpring following; and in the ſpring after, many of them will be fit to whip-graft; but when they are from two to five or ſix years old, they will be ſuitable for one or other of the ſeveral methods of Grafting.

Stocks are alſo ſometimes raiſed by layers and cuttings of the young ſhoots of particular trees of each reſpective genus, when deſigned to have ſtocks for Grafting particular varieties of fruit upon, as exhibited under their proper articles.

Stocks are likewiſe raiſed from ſuckers ariſing from the roots of the trees of the reſpective ſorts, tranſplanting them into the nurſery in autumn; to remain a year or two, and then may be grafted.

But the particular ſtocks and method of raiſing them is fully exhibited under the reſpective articles, which ſee; alſo the articles NURSERY and STOCKS.

*Of the proper Grafts.*

The grafts or cions, with which the Grafting is effected, are young ſhoots of the laſt ſummer's growth, for they muſt not be more than one year, and ſuch that grow on the outſide branches, and robuſt but moderate ſhooters, ſuch alſo that are firm and well ripened, ſhould always be choſen from healthful trees, obſerving, that the middle-part of each ſhoot is always the beſt grafts: cut at the time of Grafting, to five or ſix inches in length, or ſo as to have four or five good eyes or buds, but ſhould preſerve them at full length till Grafting time, then prepared as hereafter directed.

They ſhould be collected or cut from the trees in February, in mild weather, before their buds begin to ſwell, or advance much for ſhooting: in collecting them, chuſe ſuch as have not made any lateral or ſide ſhoots; cut them off at full length, and if they are not to be uſed as ſoon as they are collected, lay their lower ends in ſome dry earth in a warm border till Grafting time, and if ſevere weather ſhould happen, cover them with dry litter.

*Neceſſary Materials uſed in Grafting.*

The proper tools and other materials uſed in Grafting, are

A ſtrong knife for cutting off the heads of the ſtocks, previous to the inſertion of the graft, alſo a ſmall hand-ſaw for occaſional uſe in cutting off the heads of large ſtocks.

A common Grafting-knife, or ſtrong, ſharp pen-knife, for cutting and ſhaping the grafts ready for inſertion; alſo to ſlope and form the ſtocks for the reception of the grafts.

A flat Grafting-chiſſel and ſmall mallet for cleſting large ſtocks, in cleft-grafting, for the reception of the graft.

A quantity of new baſs-ſtrings for bandages, for tying the grafted parts cloſe, to ſecure the grafts, and promote their ſpeedy union with the ſtock.

And, a quantity of Grafting-clay, for claying cloſely round the grafts after their inſertion and binding, to defend the parts from being dried by the ſun and winds, or too much liquified by wet, or pinched by cold; for theſe parts ought to be ſo cloſely ſurrounded with a coat of clay in ſuch a manner as effectually to guard them from all weathers, which would prove injurious to young grafts, and deſtroy their cementing property, ſo as to prevent the junction; therefore, a kind of ſtiff loamy mortar muſt be prepared of ſtrong fat loam, or in default thereof, any ſort of tough binding clay, either of which ſhould

ſhould be laid in an heap, adding thereto about a fourth of freſh horſe-dung free from litter, and a portion of cut hay, mixing the whole well together, and add a little water, then let the whole be well beaten with a ſtick upon a floor, or other hard ſubſtance; and as it becomes too dry, apply more water, at every beating turning it over, always continue beating it well at top till it becomes flat; which muſt be repeated more or leſs according to the nature of the clay, but ſhould be ſeveral times beaten the firſt day; and next morning repeat the beating, ſtill moiſtening it with water, and by thus repeating the beating ſix or eight times every day for two or three days, or every other day at leaſt, for a week, it will be in proper order for uſe; obſerving it ſhould be prepared a week at leaſt before it is uſed, but if a month the better.

*Time and Method of Performing the Work of Grafting.*

The ſeaſon for performing the operation of Grafting is February and March, though, when the work is performed in February, it for the general part proves the moſt ſucceſsful; more eſpecially for cherries, plums, and pears, and March Grafting is well adapted for apples.

There are different methods of Grafting in practice, termed, Whip-grafting—Cleft-grafting—Crown-grafting—Cheek grafting—Side-grafting—Root-grafting—and Grafting by approach or inarching; but Whip-grafting and Cleft-grafting is moſt commonly uſed, and Whip-grafting moſt of all, as being the moſt expeditious and ſucceſsful of any.

*Whip-grafting.*—This being the moſt ſucceſsful method of all Grafting is the moſt commonly practiſed in all the nurſeries; it is always performed upon ſmall ſtocks, from about the ſize of a gooſe-quill, to half an inch or a little more or leſs in diameter, but the nearer the ſtock and graft approach in ſize the better; and is called Whip-grafting, becauſe the grafts and ſtocks being nearly of a ſize, are ſloped on one ſide, ſo as to fit each other, and tyed together in the manner of whips, or joints of angling-rods, &c. and the method is as follow;

Having the cions or grafts, knife, bandages, and clay ready, then begin the work by cutting off the head of the ſtock at ſome clear ſmooth part thereof; this done, cut one ſide ſloping upward, about an inch and half, or near two inches in length, and make a notch or ſmall ſlit near the upper part of the ſlope downward about half an inch long, to receive the tongue of the cion; then prepare the cion, cutting it to five or ſix inches in length, forming the lower end alſo in a ſloping manner, ſo as exactly to fit the ſloped part of the ſtock, as if cut from the ſame place, that the rinds of both may join evenly in every part; and make a ſlit ſo as to form a ſort of tongue to fit the ſlit made in the ſlope of the ſtock; then place the graft, inſerting the tongue of it into the ſlit of the ſtock, applying the parts as evenly and cloſe as poſſible; and immediately tye the parts cloſely together with a ſtring of baſs, bringing it in a neat manner ſeveral times round the ſtock and graft; then clay the whole over near an inch thick on every ſide, from about half an inch or more below the bottom of the graft, to an inch over the top of the ſtock, finiſhing the whole coat of clay in a kind of oval globular form, rather longways up and down, cloſing it effectually about the cion, and every part, ſo as no ſun, wind, nor wet may penetrate, to prevent which, is the whole intention of claying; obſerving to examine it now and then, to ſee if it any where cracks or falls off, and if it does, it muſt be inſtantly repared with freſh clay.

This ſort of Graſting may alſo be performed, if neceſſary, upon the young ſhoots of any bearing tree, if intended to alter the ſorts of fruits, or have more than one ſort on the ſame tree.

By the middle or latter end of May, the grafts will be well united with the ſtock, as will be evident by the ſhooting of the graft; then the clay ſhould be wholly taken away, but ſuffer the baſs bandage to remain ſome time longer, until the united parts ſeem to ſwell, and be too much confined by the ligatures, then take the tying wholly off.

Their farther culture is directed under the reſpective articles, whether deſigned for dwarfs or ſtandards, &c.

*Cleft-grafting.*—This is called Cleft-grafting, becauſe the ſtock being too large for Whip-grafting is cleft or ſlit down the middle for the reception of the graft; and is performed upon ſtocks from about one to two inches diameter.

Firſt, with a ſtrong knife cut off the head of the ſtock, or if the ſtock is very large, it may be headed with a ſaw; and cut one ſide

ſloping upwards about an inch and half to the top; then proceed with a ſtrong knife or chiſſel, to cleave the ſtock at top, croſs-way the ſlope, fixing the knife or chiſſel towards the back of the ſlope, and with your mallet ſtrike it, ſo as to cleave the ſtock about two inches, or long enough to admit the graft, keeping it open with the chiſſel; this done, prepare the cion, cutting it to ſuch length as to leave four or five eyes, the lower part of which being ſloped on each ſide, wedge-faſhion, an inch and half, or two inches long, making one ſide to a thin edge, the other much thicker, leaving the rind thereon, which ſide muſt be placed outward in the ſtock; the cion being thus formed, and the cleft in the ſtock being made and kept open with the chiſſel, place the graft therein at the back of the ſtock the thickeſt ſide outward, placing the whole cut part down into the cleft of the ſtock, making the rind of the ſtock and graft join exactly; then removing the grafting chiſſel, each ſide of the cleft will cloſely ſqueeze the graft, ſo as to hold it faſt; it is then to be bound with a ligature of baſs, and clayed over, as obſerved in Whip-grafting, leaving three or four eyes of the cions uncovered.

If intended to graft any pretty large ſtocks or branches by this method, two or more grafts may be inſerted in each; in this caſe the head muſt be cut off horizontally, making no ſlope on the ſide, but ſmooth the top, then cleave it quite a-croſs, and place a graft on each ſide, as the ſtock may be cleft in two places, and inſert two grafts in each cleft; they are thus to be tied and clayed as in the other methods.

This method of Grafting may be performed upon the branches of bearing trees, when intended either to renew the wood, or change the ſort of fruit.

Towards the latter end of May, or the beginning of June, the junction of the graft and ſtock in either methods, will be effectually formed, and the graft begin to ſhoot, when the clay may be taken off, and in a fortnight or three weeks after, take off alſo the bandages.

*Crown-grafting.*—This kind of grafting is commonly practiſed upon ſuch ſtocks as are too large to cleave, and is often performed upon the large branches of apples and pear-trees, &c. that already bear fruit, when it is intended to change the ſorts, or renew the tree with freſh-bearing wood, and is termed Crown-grafting, becauſe the ſtock or branch being headed down, ſeveral grafts are inſerted at top all around betwixt the wood and bark, ſo as to give it a crown-like appearance; obſerving that this kind of Grafting ſhould not be performed until March, or early in April, for then the ſap being in motion, renders the bark and wood of the ſtock much eaſier to be ſeparated for the admiſſion of the graft.

The manner of performing this ſort of Grafting is as follows:

Firſt cut off the head of the ſtock or branch with a ſaw horizontally, and pare the top ſmooth, then having the grafts, cut one ſide of each flat, and ſomewhat ſloping, an inch and half long, forming a ſort of ſhoulder at top of the ſlope to reſt upon the crown of the ſtock; and then raiſing the rind of the ſtock with a wedge, ſo as to admit the cion between that and the wood two inches down, which done, place the grafts with the flat ſide next the wood, thruſting it down far enough for the ſhoulder to reſt upon the top of the ſtock, and in this manner may be put three, four, five or more grafts in one large ſtock or branch.

When the grafts are all thus inſerted, let the whole be tied tight and well clayed, obſerving to leave two or three eyes of each graft uncovered, but raiſing the clay an inch above the top of the ſtock, ſo as to throw the wet quickly off, without lodging about the grafted parts, which would ruin the whole work.

Crown-grafting may alſo be performed, by making ſeveral cleſts in the crown of the ſtock, and inſerting the graſts round the top into the cleſts.

The grafts will be pretty well united with the ſtock, and exhibit a ſtate of growth by the end of May, or beginning of June, and the clay may then be taken away.

The trees graſted by this method will ſucceed extremely well, but for the firſt two or three years, have this inconvenience attending them, of being liable to be blown out of the ſtock by violent winds, which muſt be remedied by tying long ſticks to the body of the ſtock or branch, and each graft tied up to one of the ſticks.

*Cheek grafting.*—Cut the head of the ſtock off horizontally, and pare the top ſmooth, then cut one ſide ſloping an inch and half, or two inches deep, and cut the lower part of the graft ſloping the ſame length, making a ſort of ſhoulder at top of the ſloped part;

it

it is then to be placed upon the ſloped part of the ſtock, reſting the ſhoulder upon the crown of it, bind it with baſs, and finiſh with a covering of clay as in the other methods.

*Side-grafting.*—This is done by inſerting grafts into the ſides of the branches without heading them down, and may be practiſed upon trees to fill up any vacancy, or may do it for variety, to have ſeveral ſorts of apples, pears, plums, &c. upon the ſame tree.

It is performed thus: fix upon ſuch parts of the branches where wood is wanting to furniſh the head, or any part of the tree, there ſlope off the bark and a little of the wood, and cut the lower end of the grafts to fit the part as near as poſſible, then join them to the branch, and tye them with baſs, and clay them over.

*Root-grafting.*—This is done by Whip-grafting cions upon pieces of the root of any tree of the ſame genus, and plant the root where it is to remain; it will take root, draw nouriſhment, and feed the graft.

*Grafting by Approach or Inarching.*—This ſort of grafting is, that when the ſtocks deſigned to be grafted, and the tree from which you intend to take the grafts, either grow ſo near, or can be placed ſo near together, that the branch or graft may be made to approach the ſtock, without ſeparating it from the tree, till after its union or junction with the ſtock; ſo that the branch or graft being bent to the ſtock, they together form a ſort of arch; it is called Grafting by Approach, or Inarching, and as being a ſure method, is commonly practiſed upon ſuch trees as are with difficulty made to ſucceed by any of the former ways of Grafting, as hinted in their propagation.

When intended to propagate any kind of tree or ſhrub by this method of Grafting, if the tree, &c. is of the hardy kind, and growing in the full ground, a proper quantity of young plants for ſtocks muſt be ſet round it; and when grown of a proper height, the work of inarching muſt be performed, or, if the branches of the tree you deſign to graft from is too high for the ſtocks, in that caſe ſtocks muſt be planted in pots, and a ſlight ſtage muſt be erected around the tree, of due height to reach the branches, and the pots containing the ſtocks muſt be placed upon the ſtage.

As to the method of performing the work; obſerve, that in this method of Grafting, it is ſometimes performed with the head of the ſtock cut off, and ſometimes with the head left on till the graft is united with the ſtock, though by previouſly heading the ſtock, the work is much eaſier performed; and having no top, its whole effort will be directed to the nouriſhment of the graft; having however the ſtocks properly placed, either planted in the ground, or in pots around the tree to be propagated; then make the moſt convenient branches approach the ſtock, and mark on the body of the branches the parts where they will moſt eaſily join to the ſtock, and in thoſe parts of each branch pare away the bark and part of the wood two or three inches in length, and in the ſame manner pare the ſtock in the proper place for the junction of the graft, then make a ſlit upward in the branch, ſo as to form a ſort of tongue, and make a ſlit downward in the ſtock to admit it; let the parts be then joined, ſlipping the tongue of the graft into the ſlit of the ſtock, making the whole join in an exact manner, and tye them cloſely together with baſs, and afterwards cover the whole with a due quantity of clay, as before directed in the other methods.

After this, let a ſtout ſtake be fixed, if poſſible, for the ſupport of each graft, to which let that part of the ſtock and graft be faſtened, which is neceſſary to prevent their being disjoined by the wind.

The operation being performed in ſpring, let them remain in that poſition about four months, when they will be united, and the graft may then be ſeparated from the mother-tree; in doing this, be careful to perform it with a ſteady hand, ſo as not to looſen or break out the graft, ſloping it off downwards cloſe to the ſtock; and if the head of the ſtock was not cut down at the time of Grafting, it muſt now be done cloſe to the graft, and all the old clay and bandage muſt alſo be cleared away, and replaced with new, to remain a few weeks longer.

Obſerve however, that if you ſhall think the grafts are not firmly united with the ſtock, in the period of time above-mentioned, let them remain another year till autumn, before you ſeparate the grafts from the parent tree.

By this kind of Grafting, you may raiſe almoſt any kind of tree or ſhrub, which is often done by way of curioſity, to ingraft a fruit-bearing branch of a fruit-tree upon any common ſtock of the ſame fraternity or genus, whereby a new tree bearing fruit, is raiſed in a few months; this is ſometimes practiſed upon orange and lemon-trees, &c. by Graft-

ing bearing-branches upon ſtocks raiſed from the kernels of any of the ſame kind of fruit, or into branches of each other, ſo as to have orange, lemons, and citrons all on the ſame tree.

GRASS, Graſs Lawns, &c. for ornament to pleaſure-gardens.

In modern gardening, a ſpacious Graſs lawn extended in the front of the main habitation is the prevailing taſte, where, by its conſtant verdure, ſummer and winter, and open rural extenſion, exhibits a fine imitation of nature at all ſeaſons, eſpecially when each ſide-boundary terminates in rural plantations in various irregular concave, and convex curves, to take off all appearance of formality. Rural Graſs openings are alſo continued between the plantations throughout the different diſtricts of the pleaſure ground, ſeparateing and bounding the ſhrubbery clumps, &c. in ſome places widely ſpread, in others more contracted; in either caſe, extended to the boundaries of the ſeveral plantation compartments, in various irregular ſweeps and curves, which renders the whole rurally ornamental; and is agreeable and more eaſy to walk on than gravel between the plantations in dry hot weather in ſummer.

Straight Graſs walks prevailed greatly in the antient ſtyle of gardening, both for ornament and common walking; but in both theſe conſiderations, they are improper for general uſe, being attended with ſeveral inconveniencies; thoſe for ornament, unleſs they are elegantly wide and ſpacious, they have a littleneſs in their general appearance, as is obſervable in many places where long narrow ſlips of Graſs are extended to a great length, by way of walks; and with regard to having Graſs walks for common walking, they are very improper in winter, and all moiſt weather; alſo even in ſummer, in mornings and evenings, as being then always damp and dewy, which renders them very uncomfortable, as well as unſafe to ſome, with reſpect to health, to walk on them; and by conſtant walking and wheeling upon, they are often rendered bare, like a path, ſo as to appear very unſightly; Graſs walks therefore, ſhould be but ſparingly introduced, and when intended to have any, either for variety, ornament, or ſummer's walking, let it be ſpacious, not leſs than fifteen or twenty feet wide, if extended to any conſiderable length.

The method of laying or making all Graſs-work in gardens, is either by ſowing it with Graſs-ſeed, or by laying it with turf, cut from a fine common or down, the latter of which, where it can be obtained at a moderate expence, is greatly preferable; it not only at once forms a complete ſward, but is generally more cloſe, even, and ſmooth, not apt to run up to benty Graſs, or grow rank, nor riſe in tufts.

In preparing the ground either for ſowing or laying with turf, the whole ground muſt be broken up equally a moderate ſpade deep, clearing out all roots of perennial weeds; and then having ſtakes or wooden pegs, levelled in by notches, for your mark of level, agreeable to the laws of proportion, and the poſition of the ground, proceed with line and ſpade, to rough-level it, according to the ſaid mark or level on the pegs, and then tread or ram the whole down equally, that it may no where ſink in hollows hereafter; this done, work off your levels more acurately, and finiſh the whole with a neat raking, clearing off all large ſtones, making an even and ſmooth ſurface; and it is then ready, either for ſowing with ſeed, or to be laid with turf.

As it may in ſome places be the moſt convenient to ſow the ground with Graſs ſeed, and in others, to lay it with turf, we will exhibit both methods ſeparately.

*By Seed.*

By ſowing with ſeed.—If intended to ſow the ground with Graſs-ſeed, as may be the caſe for large ſpaces of ground, or where turf cannot be conveniently obtained, the ſeaſon for ſowing it is February, March, and April, and will come up fine and green in a month or ſix weeks; and if ſown in Auguſt or September, in moiſt weather, it will alſo riſe very faſt and thick before winter. The chief article is to procure good ſeed; thoſe from under a common hay-ſtack, or out of a hay-loft, are often uſed, which may do very well, provided the hay was the growth of ſome fine paſture free from weeds, and affords naturally fine turf when grazed and mowed, but without attending to theſe particulars, there are often a mixture of various ſorts, weeds and all, whereby the ſward will be very irregular and foul, and never make handſome Graſs. If you are not furniſhed with ſeeds of your own, they may be obtained cheap enough of the ſeeds-men; it muſt be ſowed by broad-caſt, very thick and regular, and directly rake it in, and roll it when the ſurface is dry with a wooden roller, which will bury the ſeed

ſeed more effectually, and make a ſmooth ſurface; when the Graſs comes up, pull up all weeds, and, the ſame ſeaſon when the ſward is become thick and green, and advanced ſome inches, it ſhould be mowed, and after this roll it well, and ſo continue mowing it, &c. two or three times the firſt ſummer, eſpecially if it was ſowed in ſpring; and the oftener it is mowed and rolled, the thicker and finer it will grow, obſerving, if intended to keep the Graſs tolerably fine, mowing will be requiſite once a week or fortnight according to its growth, from April until October, and ſhould be rolled once a week in all open weather the year round.

*By Turf.*

Laying the ground with turf, when turf can be eaſily procured, ſhould always be greatly preferred to ſeed for Garden-graſs, for the reaſons before mentioned, and the beſt turf for that purpoſe is, that of a fine paſtured common or down, where the ſward is fine and the Graſs ſhort.

The ſeaſon for laying turf is any time from September till April or May, though it will grow at almoſt any time of the year, even if there is occaſion to lay it in ſummer, and dry weather ſucceed; for although it will divide or open wide at the joints, and turn brown as if dead, yet after the firſt rain it will cloſe again, and reſume its verdure.

The turf for this uſe, is cut or flead with an iron inſtrument called a turfing-iron, which ſee, obſerving to cut them all an equal width, length, and thickneſs; the proper ſize is a foot wide, yard long, and about an inch thick; they ſhould be firſt marked by line, the proper width, length, and depth, with a racer or rutter. See RACER. Racing them firſt long ways a foot wide, then acroſs in yard lengths, then proceed to cut them up, having particular regard to cut them level, all an equal thickneſs, otherwiſe it will be impoſſible to lay them level; as you cut, a man or boy ſhould roll each turf up cloſe and tight, the Graſs ſide inwards, and pile them up by tens, eſpecially if they are cut by the hundred.

If they are cut by the hundred, the price is from ſix-pence to a ſhilling, according to the nature of the ſoil, whether ſoft and eaſy to cut, or hard or ſtoney; and a man will cut from three to five, ſix, or ſeven hundred in a day, or more, if very ſoft eaſy cutting turf, having a perſon to race them out and roll them up, turf and turf as they are cut, out of the way of the cutter.

As to the method of laying them, it is very eaſy; they are to be laid regular, turf and turf, unrolling them as you lay them, joining them up quite cloſe edge to edge, making good all deficiency of broken parts as you go on; and as ſoon as laid, it ſhould be well beaten with broad heavy wooden beaters, being flat pieces of elm or oak plank, two inches thick, fifteen or eighteen inches long, and a foot broad, having a long handle fixed ſlanting in the middle of the upper ſide; and with theſe beat the graſs regularly all over, and then roll it well with a heavy iron or ſtone roller, and the work is finiſhed, obſerving, the beating and rolling ſhould be repeated in moiſt weather.

If very dry hot weather ſucceeds, ſo as to occaſion the turf to ſhrink and open at the joints, a good watering will be of much advantage; do not however, be under much anxiety about this, for, as before hinted, the firſt rain will join all cloſe, and recover the verdure of the Graſs effectually.

*Its general management throughout the Year.*

The culture neceſſary for garden Graſs, is frequent mowing in ſummer, to keep it ſhort and fine like a paſtured down; poleing occaſionally with a long pole, to ſcatter the worm-caſts, which ſo greatly deface all graſs; frequent rollings both to take up the ſcattered worm-caſts to make the ſurface clean, and to render it ſmooth and firm.

As to mowing; to keep Graſs in gardens very neat, mowing it once a week or ten days during the ſummer is neceſſary, eſpecially for the principal home-lawns, and other Graſs-ground in the moſt conſpicuous parts of the garden, which parts ſhould always be kept very cloſe and fine, like the ſward of a fine paſtured down or common: the mowing of garden Graſs is performed with a ſhort-Graſs ſcythe, ſee MOWING, and SCYTHE, &c. obſerving, that dewy mornings, or moiſt weather muſt always be choſen for that work, for it will be impoſſible to mow ſhort Graſs properly in dry weather. But previous to mowing, it is of great advantage to pole and roll the Graſs the day before you intend to mow; in performing the mowing, great attention is neceſſary not to ſcore, i. e. leave the mark of each ſtroke of the ſcythe, which has a very unſightly appearance; to prevent which, as much as poſſible, have your ſcythe laid out rather

rather wide, an inch or two beyond heel and toe, eſpecially for very ſhort Graſs; and in mowing, keep the point rather out, and do not draw that part two faſt toward, gathering your Graſs neatly to the left in a range, and having mowed to the end of the ſwarth, mow it lightly back again, to trim off all ſcores, and other irregularities, unavoidably left the firſt time.

As ſoon as you have done mowing, proceed to ſweep up the mowing, each ſwarth regularly by ſtanding in the middle, ſweeping it along alternately to the right and left to the end of the ſwarth, forming all the Graſs thereof in a range on each ſide, then ſweep up the ranges in large heaps, and carry the whole off directly in a wheel-barrow or large baſket.

Poleing the Graſs. This is performed with a long taper pliable aſhen-pole, fifteen or eighteen feet long, to break and ſcatter the worm-caſts about, i. e. thoſe little lumps of earth caſt up by the worms all over the ſurface of the Graſs and greatly deface it; but by uſing the pole, when they are moderately dry, ſweeping it backward and forward upon the Graſs, breaks the earthy lumps into ſmall particles, and ſcatters them about, and if the Graſs is afterwards rolled with a wooden roller when the ſurface is a little moiſt, but not too wet, the earth will all adhere to the roller, and render the ſurface perfectly clean; obſerving this work ſhould be repeated, as you ſhall ſee occaſion the year round, and in mowing time, if the ſurface is foul, it is particularly neceſſary to pole and roll on the day previous to mowing, whereby, having a clean ſmooth ſurface, you will be able to mow cloſe, even, and expeditiouſly.

Rolling garden Graſs, is performed occaſionally with a wooden roller, and a heavy iron or ſtone roller: a wooden roller is proper always after poleing as obſerved above, to clean up the worm-caſts and ſmooth the ſurface, obſerving this work ſhould never be performed when the ſurface is very wet, eſpecially if full of worm-caſts, as it would plaiſter and daub the graſs very much, and render it unſightly; a heavy iron or ſtone roller ſhould be uſed occaſionally, to preſs down all inequalities cloſe, ſo as to preſerve a firm, even, ſmooth ſurface. Rolling is always of particular ſervice, performed occaſionally the day before mowing, as it greatly contributes to the eaſy and exact performance of that work; the work of rolling is in ſmall, or but moderately large gardens, always performed by men, but in very extenſive grounds, it is done by horſe, having a large roller for that purpoſe, with ſhafts like a cart, &c. and the horſe ſhould at that time wear leather ſhoes, very broad at bottom, made to lace on occaſionally like men's half-boots.

In ſome places the Graſs is greatly defaced in May and June by the vaſt quantities of wild daiſies daily ariſing, to remedy which, as much as poſſible, I have had the blade of an old broad ſword, fixed in the end of a long pliable pole, and as a ſword cuts both ways, by ſweeping it backwards and forwards, it will head down the daiſies a great pace, which may be repeated two or three times a week, or as often as there may be occaſion.

GRAVEL. Gravel-walks are great ornaments to gardens, as well as the moſt uſeful kinds of walks for common walking.

The beſt Gravel for walks is that which is compoſed naturally of irregular pebbles and flints, having a moderate proportion of a yellowiſh or browniſh ſandy loam, to make it bind and give colour; which kind of Gravel is the moſt common and valuable of all for walks, and is obtained in fields and commons in moſt parts of England, at about from one to three or four feet under the ſurface, though not equally good in all parts in reſpect to quality and colour; ſome may have a greater or leſſer quantity of pebbles, a larger or ſmaller quantity of loam, the loam more or leſs ſandy or clayey; and as to colour, it is the colour of the loam principally which conſtitutes the beauty of Gravel-walks, and that of a deepiſh yellow, or reddiſh colour is the moſt eligible, as when formed into walks well laid and rolled, is exceedingly beautiful and ornamental, and where ſuch Gravel can be procured within a moderate diſtance, and eaſy expence is preferable to all other; but in ſome parts, the Gravel is of an iron-mould colour, or of a duſky brown hue, which may nevertheleſs be of a proper quality for walks, provided the colour can be diſpenſed with, and as the moſt eſteemed high-coloured Gravel is not to be met with every where, we muſt be content with ſuch as nature affords.

It muſt however be remarked, that of whatever colour the Gravel, its proper quality for walks is, ſuch as has a due proportion of moderate loam, to make it bind cloſe and firm at all ſeaſons, but not ſo redundant in loam, nor ſo clayey as to be clammy and ſtick to the feet in wet weather, nor too ſharp and

ſandy,

ſandy, to become open and looſe in dry weather.

In ſome places, however, there is no other gravel but ſuch as is very looſe, ſandy, or pebbley, having ſcarcely any binding materials amongſt it, which kind of gravel will never of itſelf bind, but always remain open and looſe, and be at all times diſagreeable to walk on: this, therefore, ſhould be mended with a mixture of loam, where practicable, adding about one load to every two or three of gravel, caſting them together, and turning them over two or three times, that they may be well blended and incorporated; and this, when formed into a walk, will bind cloſe, firm, and ſmooth at all ſeaſons.

In preparing the gravel for your walks, it ſhould by no means be ſcreened, as is often the practice, only as it is dug out of the pit, caſt it up in a heap, or long ridge, and all ſuch large rough pebbles only as roll down, ſhould be cleared away; for if ſcreened from the ſtones, it will partake too much of the loam, as always to ſtick to the feet at every flaſh of rain, but by raking out juſt only the large rough ſtones, it will be ſufficiently fine, and the walk formed of ſuch will always be fit for uſe.

Gravel for walks, if it is to be purchaſed, is from about two to five or ſix ſhillings per cart-load for three horſes; though the price is different in different parts, and according to the nature of the Gravel; but about London, if they cart it home from the pits, it is commonly five or ſix ſhillings per load, or more according to the diſtance, and ſometimes they carry a load and a half at once, in the ſame cart, which is charged accordingly.

As to the diſtribution of Gravel walks in gardens, both for ornament and uſe, a magnificent walk of Gravel is neceſſary to proceed immediately parallel with the houſe, proportionable to its grandeur, extending each way in proportion to the width of the garden; and according to the former ſtyle of gardening, a large grand Gravel walk was uſually extended in a ſtreight line from the front of the habitation, along the middle of the pleaſure ground, ſometimes having graſs plats continued on each ſide, and ſometimes ſpacious borders furniſhed with curious ſhrubs and flowers; But in modern deſigns the above middle walk is rarely admitted, eſpecially in ſpacious gardens, having nothing in front beyond the parallel walk, but an open rural graſs lawn, free from all interſections of walks, &c. however, a grand walk cloſely parallel to the houſe, as obſerved above, is indiſpenſibly neceſſary, both for ornament and uſe; and from this, ſide walks ſhould branch off, communicating with the other parts of the garden, one in particular to be laid in a ſerpentine turn quite round the ground, others leading in the ſame manner through the interior parts, ſo as to have dry firm walking at all times to every part of the garden without walking upon the graſs, which ſometimes may be wet and diſagreeable.

As to the dimenſions for Gravel walks, they are to be regulated according to the extent of the garden, ſo may be from five to twenty feet or more wide, the length indeterminate; but all principal walks ſhould be at leaſt ten or twelve feet wide; and in large gardens, that leading directly from the houſe ſhould be fifteen or twenty feet wide at leaſt; tho' where the houſe and gardens are magnificent, the main walks contiguous to the manſion are ſometimes made thirty or forty feet wide; the boundaries on each ſide is ſometimes of graſs widely extended, and ſometimes are bounded by borders for flowers and other curious plants, having either narrow verges of graſs, or edgings of dwarf box, or thrift, &c. next the walk.

According, therefore, to the above rules, ſtake out the width of the walk, and proceed to form the boundary, each ſide of equal level, correſponding to the adjacent ground, and form the cavity of the walk for the reception of the gravel; obſerving that the whole ſpace muſt be digged at leaſt ten or twelve inches deep, to allow for a proper depth of gravel, both to prevent weeds riſing from the ground below, and worms from caſting up the earth therefrom; as alſo to allow for turning the gravel occaſionally when the ſurface becomes foul: the earth digged out to form the cavity of the walk, may be uſed to raiſe and form the ground on each ſide, if neceſſary, which, and the edgings, ſhould always be completed before you begin to lay the Gravel.

Every thing being ready for the reception of the Gravel, then you may in the firſt place lay any hard rubbiſhy materials in the bottom, ſeveral inches thick; ſuch as any coarſe gravel or ballaſt, or any rough ſtoney rubbiſh, which can be beſt procured, which will greatly prevent worm-caſts, and help to drain the moiſture from the top of the walk: the proper gravel is then to be laid ſix or eight inches thick at leaſt; as you proceed in laying, obſerve to raiſe the middle higher than the ſides,

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in a gradually rounding form, which is not only neceſſary to throw off the wet, but alſo to give the walk a more ornamental appearance; the proportion to be obſerved in this is, that for a walk of five or ſix feet width, an inch and half riſe in the middle may be ſufficient; one of ten or twelve feet, two and a half; and one of twenty feet, four or five inches riſe will be enough; obſerving nearly the ſame proportion in any width whatſoever, and by no means raiſe the middle much higher, which would render the walk both uneaſy to walk upon, and of diſagreeable appearance; being particularly attentive to form the riſe all the way gradually rounding from both ſides to the middle, laying every part very exact and even; and at every ten or fifteen feet as you advance in laying, it is proper to tread, rake, and roll it, for gravel always rolls more firm and ſmooth whilſt it is freſh ſtirred; beſides, it is neceſſary for fear of rain happening; for which reaſons alſo, you ſhould never lay more in one day than you can finiſh off, except to rough lay it; the treading ſhould therefore be performed regularly with the feet pretty cloſe, taking ſhort ſteps; which work being neceſſary to render every part equally firm, and ſo as not to ſink in holes when you rake and roll it. The raking ſhould be performed lengthwiſe, and a rake without teeth is the moſt eligible, or, in default thereof, uſe the back of any common rake occaſionally, whereby you will be able to ſmooth the ſurface very evenly without drawing off the larger pebbles, or raking them into holes or heaps, as is unavoidable in uſing the teeth of a rake; for the art of ſmooth-raking is to leave all the top ſtones equally diſperſed over the ſurface. As ſoon as it is raked, let it be well rolled, both acroſs and lengthways,; and when the whole is laid, give a good rolling the whole length, repeating it till the ſurface is rendered perfectly compact, firm, and ſmooth; and if after the firſt ſhower of rain, you give it another good rolling, it will bind like a rock.

The management of Gravel walks, to keep them perfectly neat the year round, is occaſional weeding, ſweeping, and good rolling once or twice a week; and when the ſurface becomes very foul with weeds or moſs, as is often the caſe, the walk muſt be broken up in ſpring, and turned, the ſurface to the bottom, and the bottom to the top, whereby the weeds and moſs will not only be buried, but by turning up the freſh gravel, the walk will appear as freſh as when new laid. But the cuſtom of breaking up gravel walks in the beginning of winter, in rough ridges, to remain in that uſeleſs and unſightly manner till ſpring, to deſtroy weeds, &c. as is thought, is a very wrong practice, for the intention has rather the contrary effect; and the walks are thereby not only rendered uſeleſs for almoſt one half of the year, but at a time when there is hardly any dry or ſound walking upon graſs or other parts: beſides theſe inconveniencies, the walks appear not only unſightly in themſelves, but give alſo a very diſagreeable look to the adjacent parts of the garden: let the walks therefore always remain undiſturbed, at leaſt till ſpring, when, if neceſſary, they may be turned.

Rolling ſhould be performed once a week at leaſt, but if two or three times the more beautiful the walks will appear, and tend greatly to deſtroy weeds and moſs: it is, however, a general rule among gardeners, to ſweep and roll every Saturday; and during ſummer it is of much advantage to give a good rolling after rain, which will preſerve a compact ſmooth ſurface.

Turning gravel is a ſort of ſlight digging, turning the foul ſurface down and the freſh up, which being neceſſary, as above obſerved, when the ſurface is full of ſmall weeds, or very moſſy, and which is the only effectual method of deſtroying them; beſides, the work of turning is neceſſary once every year or two in ſpring, to turn up the freſh gravel to give the ſurface a lively appearance during ſummer; therefore ſome make it a rule to turn their principal Gravel walks every ſpring; and the proper time is April, when the weather is become ſettled and fine: in performing the work of turning, give every ſpit a clean turn, ſo as to turn the ſurface down, and the freſh gravel to the top; and as you go on, tread, rake, and roll, every ten or fifteen feet, as obſerved in new laying the walks.

GREEN-HOUSE, a garden-building fronted with glaſs, ſerving as a winter reſidence for tender plants from the warm parts of the world.

A very conſiderable ſhare of the vegetable creation that grow naturally in diſtant warm climates in open fields, &c. at all ſeaſons, which in their culture in this climate require protection in winter; obſerving, however, thoſe of the Green-houſe department being only from the warmer parts of the world, require

quire protection only from froſt, not needing aid of artificial heat, like ſtove-plants, from the hotteſt regions, except in very intenſe weather; when the aid of a moderate fire, burned either within the houſe, or in a furnace without, in the end or back wall, communicating the heat to flues or funnels ranging along the inſide. Though there may not be occaſion for any fire once in two or three years, yet it is adviſable in conſtructing a Green-houſe to erect flues to uſe occaſionally, which will prove ſerviceable, not only in ſevere froſts, but alſo in long moiſt foggy weather; a moderate fire now and then will dry up the damps, which would otherwiſe prove pernicious to ſeveral of the tender kinds of plants.

We will firſt exhibit a general ſketch of the dimenſions of a Green-houſe, then give a liſt of all the principal Green houſe plants uſually cultivated in the Engliſh gardens, together with their general culture.

A Green-houſe ſhould generally ſtand in the pleaſure-ground, and, if poſſible, upon a ſomewhat elevated and dry ſpot, full to the ſouth, and where the ſun has full acceſs from its riſing to ſetting; the building is commonly of brick or ſtone, having the front almoſt wholly of glaſs-work; and muſt range lengthways eaſt and weſt, with the front directly facing the ſouth, and ſhould generally be conſtructed upon an ornamental plan. As to its general dimenſions, with reſpect to length, width, and height, it may be from ten to fifty feet or more long, according to the number of plants you deſign it ſhall contain; and its width may be from ten or fifteen to twenty-four feet; though for a middling houſe fifteen or eighteen feet is a ſufficient width; and its height in the clear, ſhould be nearly in proportion to the width: but as to the erecting rooms over it, as is commonly directed, I ſhould adviſe to have none, as being not only an unneceſſary expence, but gives the building a heavy look, for all garden-buildings ſhould have a light airy appearance.

The walls in the back and ends ſhould be carried up two bricks, or about eighteen inches thick; though if the building is to be more than fifteen feet high, the walls ſhould be two bricks and a half thick; and at one end of the back wall, withoutſide, it is eligible to erect a furnace for burning fires occaſionally, as before obſerved, communicating with flues within, ranging in three or four returns along the back wall, alſo one flue running along the front and end walls, cloſe to or juſt under the floor; all of which will be extremely ſerviceable in time of intenſe froſts, and very damp foggy weather; and as to the front of the building, it ſhould have as much glaſs as poſſible, and a wide glaſs door ſhould be in the middle, both for ornament aud entrance, and for moving in and out the plants; and it would be convenient to have alſo a ſmaller private door at one end: the width of the windows for the glaſs ſaſhes, may be five or ſix feet, and the piers between the ſaſhes may be either of timber, ſix, eight, or ten inches wide, according to their height, or if of brick or ſtone work, muſt be two feet wide at leaſt, to be duly ſubſtantial, ſloping both ſides of each pier inward, that by taking off the angles, a freer admiſſion may be given to the rays of the ſun: for the ſame reaſon have the bottom of the ſaſhes to reach within a foot of the floor of the houſe, and their top reach almoſt as high as the cieling; and if brick or ſtone piers two feet wide, ſhutters may be hung withinſide to fall back againſt each pier: the roof may either be half glaſs-work, next the front; the other half ſlated, eſpecially if the upright or front piers are of timber; and ſhutters to cover the top glaſſes may be contrived to ſlide under the ſlated roof: but if the piers are of brick or ſtone, it is common to have the roof entirely either ſlated or tyled, but ſlating is the moſt ornamental, either for a half or whole roof; and the cieling within ſhould be lathed, and which, as well as the whole inſide-wall, ſhould be well plaiſtered and white-waſhed.

But in the modern conſtruction of Green-houſes, in order to have as much glaſs as poſſible in front, the piers between the ſaſhes are commonly of timber only, from ſix to eight or ten inches thick, according to the height, ſo as to admit as great a portion of light and heat of the ſun as may be; and on the ſame conſideration, continue glaſs-work ſloping half way up the roof, the other half ſlated, as above obſerved; and ſliding ſhutters alſo contrived to ſlide under the ſlated roof, to draw down occaſionally in ſevere weather, or in time of hail ſtorms, to defend the glaſſes; and for the front, may have either wooden or canvas ſhutters, or large canvas cloths upon rollers, to let down occaſionally, or, in default thereof, nail up garden-mats in ſevere weather.

Sometimes Green-houſes for large collections of plants, have two wings, of ſmaller dimenſions, added to the main building, one

at each end, in a right line, ſeparated ſometimes from it by a glaſs partition, with ſliding ſaſhes for communication, and the front almoſt wholly glaſs-work, and half glaſs roofs as above hinted; thus by theſe additional wings, the Green-houſe conſiſts of three diviſions, whereby the different qualities and temperatures of the various plants can be more eligibly ſuited. The middle or main diviſion may be for all the principal and more hardy, woody or ſhrubby kinds, which require protection only from froſt; one of the wings may be appropriated for the ſucculent tribe, and the other wing for the more tender kinds that require occaſional heat in winter, yet can live without the conſtant heat of a ſtove.

On whatever plan the Green houſe is conſtructed, let the whole inſide, both cieling and walls, be neatly finiſhed off with plaiſter and white-waſh, and all the wood-work painted white; and the bottom paved with large ſquare paving tyles.

The neceſſary utenſils of the Green houſe are principally ſome treſſels or ſtands for the ſupport of boards, on which to arrange the pots of plants, ſo as to have their heads range in a gradual ſlope from the back part to the front; but as ſome of the plants may be tall and in large tubs, and either do not require ſtands, or cannot be eaſily placed thereon, ſuch muſt be regulated as you ſhall ſee convenient.

From the above general ſketch, any one may form an idea of the principal dimenſions of a Green-houſe, which he may enlarge or diminiſh as it may ſuit his convenience.

*Green-houſe Plants.*

We will now proceed to exhibit, at one view, a liſt of the principal Green-houſe plants, having recourſe for particulars to each reſpective genus.

AGAVE, *Agave* or *American Aloe.*—Common great American Agave, with entire green leaves, and a branching flower ſtalk.—Common Agave, with ſtriped leaves.—Virginia Agave, with narrower pale green leaves. (*All ſucculent plants.*)

ALOE, *African Aloes.*—Mitre ſhaped Aloe.—Tree, or Sword Aloe.—Aloe Ferox.—Fan Aloe.—Succotorine Aloe.—Soap Aloe.—Partridge-breaſt Aloe.—Tongue Aloe.—Warted-tongue Aloe.—Pearl-tongue Aloe.—Cob-web Aloe.—Hedge-hog Aloe.—Cuſhion Aloe.—Spiral Aloe.—Pentangular Spiral Aloe.—Triangular Spiral Aloe.—*Iris Uvaria* Aloe; this Aloe will alſo live in a warm border.—(*All ſucculent.*)

ANDROMEDA, Tree Andromeda, or Carolina Sorrel-tree.——(*Shrubby.*)

ANTHERICUM, *Spider-wort.*——Shrubby, ſtalked, onion-leaved Anthericum—Aloe-leaved Anthericum—Mock-aſphodel Anthericum. (*Succulent.*)

ANTHOLYZA, *Æthiopian Corn-flag.*—Ringent Scarlet Antholyza—Æthiopian Crimſon Antholyza—Cunonia, or large-ſpathæed ſcarlet-flowered.——(*Herbaceous.*)

ANTHOSPERMUM, *Amber-tree.*—Æthiopium Smooth Amber-tree—— Ciliated Amber-tree.

ANTHYLLIS, Jupiter's Beard, or *Barba Jovis.*—Common *Barba Jovis*, or Silver Buſh—Spaniſh ternate-leaved *Barba Jovis*——Dwarf Portugal *Barba Jovis*—Erinacea, or Prickly *Anthyllis.* (*All of ſhrubby growth.*)

ANTIRRHINUM, Snap-dragon.—Variegated Snap-dragon—Gibraltar ſpotted-flowered *Linaria.* (Both of an herbaceous nature.)

ARCTOTIS, *Arctotis.*—Rough-leaved Arctotis.—Narrow-leaved Arctotis.—Sea Ragwort-leaved Arctotis.—Plantain-leaved Arctotis—Stalkleſs Arctotis; (are moſtly of a ſhrubby nature, except the laſt ſort.)

ARISTOLOCHIA, *Birth-wort.*—Evergreen Ariſtolochia——Piſtolochia, or ſmall Birthwort—Shrubby Birth-wort. (The two firſt are herbaceous, the other ſhrubby.)

ARTEMISIA, *Mug-wort.*—Tree Wormwood.

ASCLEPIAS, *Swallow-wort.*——Shrub Aſclepias.

ASPARAGUS. White Prickly Aſparagus.—Declinated Briſtly-leaved Aſparagus—Acute-leaved Aſparagus.—Retrofracted Great Prickly Aſparagus: have all ſomewhat ſhrubby ſtalks.

ASTER, *Star-wort.*——Shrubby African Aſters.

ASTRAGALUS, *Milk-vetch, &c.*——The *Tragacanth*, or Goats-thorn; ſeveral varieties. (*All ſhrubby.*)

ATROPA, *Deadly Night Shade.*—Shrubby Deadly Night Shade of Spain.

BACCHARIS, *Ploughman's Spikenard.*—Iva-leaved Baccharis—Oleander-leaved Baccharis—Halimus-leaved Baccharis. (*All ſhrubby.*)

BOSEA, *Yerva-mora*, or Shrubby Golden-rod Tree.

BRYONIA, *Briony.*——African Tuberous-rooted Briony. (*Herbaceous*)

BUBON, *Macedonian Parſley.*——Shrubby Galbaniferous Bubon—Shrubby Gummiferous Bubon.

EUPHTHALMUM, *Ox-eye.*—Shrubby Jamaica Ox-eye.—Maritime, or Sea Ox-eye.

BUPLEU-

BUPLEURUM, *Hare's-ear.*—Shrubby Æthiopian Hare's-ear——Shrubby Diſforme-leaved Cape Hare's-ear.

CACALIA, *Foreign Colt's Foot.*—*Cacalia Ficoides*—Kleinia, or Indian Cacalia—Anteuphorbium Cacalia ——Papillary Cacalia. (*Succulent*)

CACTUS, *Melon-thiſtle.*—Cactus Opuntia, or Common Indian Fig.——(*Succulent.*)

CALENDULA, *Marigold.*—Shrubby Cape Marigold—Shrubby Graſs-leaved Æthiopian Marigold.

CALLA, *Sweet Calla*, or Æthiopian Arum. (*Herbaceous.*)

CAMPANULA, *Bell-flower* — American Bell-flower—Canary Bell flower. (*Herbaceous.*)

CANNA, *Indian Flowering Reed.*—Common Indian Flowering Reed, and varieties—Glaucous Indian Reed. (*Herbaceous.*)

CAPPARIS, *Caper Buſh.*—Spinous Capparis, or True Caper Shrub.

CASSINE, Cape Phillyrea.—*Maurocenia*, or Hottentot Cherry. (*Shrubby.*)

CEANOTHUS.—— African Ceanothus. (*Shrubby.*)

CELASTRUS, *Staff tree.*—Pyracantha-leaved *Celaſtrus*— Box-leaved— Myrtle-leaved. (*Shrubby.*)

CERATONIA, Carob-tree.—Common Carob-tree, or St. John's Bread.

CHAMÆROPS, Dwarf Palm.

CHRYSANTHEMUM.——Shrubby Canary Chryſanthemum—Shrubby Floſcular Chryſanthemum.

CHRYSOCOMA, Goldy-locks.——Shrubby *Coma Aurea*, or Greater African Goldy-locks—Shrubby Nodding Goldy-locks.

CISTUS.—Bay-leaved Ciſtus— Sea-Purſlane-leaved Ciſtus; alſo ſeveral of the other ſpecies. See CISTUS. (*Shrubby.*)

CITRUS, Citron-tree.— Lemon-tree, and Orange, with all the varieties of each. See CITRUS.

CLIFFORTIA; Ilex leaved Cliffortia. (*Shrubby.*)

CLUTIA; *Alaternoide Clutia.*—Purſlane-leaved Clutia—*Elateria*, or Indian Clutia. (*All ſhrubby.*)

COLUTEA; Shrubby Æthiopian Scarlet Colutea.

CONVOLVULUS.——Ever-green Canary Convolvulus—Silvery Convolvulus. (*Shrubby.*)

CORONILLA.—Valentine Coronilla —— Glaucous Coronilla—Silvery Coronilla.—(*Shrubby.*)

COTYLEDON, *Navel-wort.*—Round-leaved— Long-leaved — Hemeſpherical-leaved. (*Succulent.*)

CRASSULA, *Leſſer Orpine.*—Several ſpecies, ſee CRASSULA. (*Succulent.*)

CRINUM, *Aſphodel Lily.*—African Aſphodel Lily—Broad-leaved. (*Herbaceous.*)

CYCLAMEN.—Perſian Cyclamen —Several varieties. See CYCLAMEN. (*Herbaceous*)

DIGITALIS, *Fox Glove.*—Shrubby Canary Fox Glove.

DIOSMA, *African Spiræa.*—Oppoſite-leaved——Hairy leaved—— Red Dioſma, &c. (*Shrubby.*)

DRACOCEPHALUM.——Canary Dracocephalum, or Balm of Gilead. (*Herbaceous and under-ſhrubby.*)

EBONUS, *Ebony.*—— Ebony of Crete. (*Shrubby.*)

ERYTHRINA, *Coral-tree*—Herbaceous Erythrina.

EUPHORBIA,—moſt of the ſorts. See EUPHORBIA. (*Succulent.*)

GENISTA, *Broom.*——Shrubby Canary Broom.

GERANIUM. All the ſhrubby kinds, and ſome herbaceous See GERANIUM.

GNAPHALIUM.—Oriental Gnaphalium, and varieties—Sweet-ſcented Gnaphalium, &c. (*Underſhrubby.*)

GREWIA.—Occidental Grewia. (*Shrubby.*)

HALLERIA.— African-fly Honey-ſuckle. (*Shrubby.*)

HELIOTROPIUM, *Turn-ſole.*——Shrubby Peruvian Heliotropium.

HERMANIA, Althea-leaved.—— Alder-leaved — Lavender leaved —— Gooſeberry-leaved. (*Shrubby.*)

HYPERICUM, *St. John's Wort.*—Warted-leaved Minorca St. John's Wort—Carolina St. John's Wort——China Monogynous St. John's Wort. (*Shrubby.*)

JASMINUM.—*Jaſmine.*—Catalonian Jaſmine—Azorian Jaſmine—Yellow Indian Jaſmine. (*Shrubby.*)

IBERIS, *Candy-tuft.*——Ever-green Tree-Candy-tuft; and Ever-green Striped-leaved—Ever-flowering Tree-Candy-tuft.

INULA, *Inula.* (*Underſhrubby.*)

JUSTICIA, *Malabar-nut-tree.*

IXIA,—African Woolly-headed *Ixia*—— Bulbiferous *Ixia*—Flexuoſe *Ixia*—Corymboſe Spotted-flowered *Ixia.* (*Herbaceous.*)

KIGGELARIA.—African *Kiggelaria.* (*Underſhrubby.*)

LANTANA, *American Viburnum.*—African *Lantana*, or *Ilex*-leaved Jaſmine—Sage-leaved *Lantanta.* (*Shrubby.*)

LAVATERA.—Cape Lavatera. (*Underſhrubby.*)

LAVENDULA, Lavender.——Cut-leaved Canary-Lavender. (*Underſhrubby.*)

LAURUS, *Bay-tree.*—Carolina Blue-berried Bay—Red-berried Bay-tree—Indian Bay-tree—Cinnamon-tree—Camphire-tree—Deciduous Bay-tree.

LEONURUS, *Lion's-tail.*—African Scarlet Leonurus—Striped-leaved Leonurus. (*Herbaceous.*)

LOBELIA.——Shrubby, Pine-leaved, Blue Lobelia.

LOTUS, *Bird's-foot Trefoil.*—Cretan Silvery Lotus—*Lotus Jacobæus*—Upright Lotus—Proſtrate Lotus. (*Underſhrubby and herbaceous.*)

LYCIUM, *Box-thorn.*—African Box-thorn—Barbary Box-thorn. (*Shrubby.*)

MALVA, *Mallow.*—African Shrub Mallow.

MEDIOLA.—Climbing African Mediola. (*Underſhrubby.*)

MEDICAGO.—Shrubby Hoary Medicago, or Moon Trefoil.

MELIA.—Bead tree.

MENTHA, *Mint.*—Tree-Mint.

MESEMBRYANTHEMUM, *Fig-Marigold*—Many curious ſpecies. See MESEMBRYANTHEMUM. (*Succulent.*)

MOREA.—Canaliculated-leaved Morea—Ruſh-leaved Morea.

MYRICA, *Gale, Sweet Willow*, or *Candleberry Myrtle.*—Oak-leaved Myrica—Æthiopian Heart-leaved Myrica. (*Shrubby.*)

MYRTUS, *Myrtle-tree.*—Common Myrtle; there being but one ſpecies, which comprehend many eminent varieties. See MYRTUS. (*Shrubby.*)

NERIUM, *Oleander*, or *Roſe-bay.*—Common Oleander—with red flowers—ſcarlet flowers—white flowers—double flowers—ſtriped-leaved. (*Shrubby.*)

OLEA, *Olive-tree.*—European Olive-tree—Cape, or African Olive-tree.

ONONIS, *Reſt Harrow.*—Shrubby Spaniſh *Ononis.*

ORIGANUM, *Origany.*—Dittany of Crete. Dittany of Mount Sipylus—Cretan Marjoram—Origany of Smyrna. (*Underſhrubby.*)

ORNITHOGALUM, *Star of Bethlehem.*—Cape Onithogalum. (*Herbaceous.*)

OSTEOSPERMUM.—Hard-ſeeded Chryſanthemum. (*Shrubby.*)

OTHONNA, *Ragwort.*—Pectinated, or Wing-leaved Othonna—Southernwood-leaved. (*Shrubby.*)

PASSERINA, *Sparrow-wort.*—Shrubby African Paſſerina.

PERIPLOCA, *Virginian Silk.*——African hoary climbing Periploca, and varieties. (*Underſhrubby.*)

PHLOMIS, Jeruſalem Sage.—Yellow Phlomis, and varieties—Purple Phlomis. (*Shrubby.*)

PHYLICA, *Baſtard Alaternus.*—Box-leaved Phylica—Heath-leaved. (*Underſhrubby.*)

PHYLLIS, *Baſtard Hare's-ear*, or *Simpla Nobla.* (*Underſhrubby.*)

PHYSALIS, Alkekengi, or Winter Cherry—Somniferous Winter Cherry—Flexuoſe Winter Cherry. (*Shrubby.*)

PISTACIA, *Piſtachia nut*, and *Maſtic-tree*, two or three varieties. (*Shrubby.*)

POLYGALA, *Milk-wort.*—Shrubby Myrtle-leaved Polygala.

PORTULACA, *Purſlane.*—Shrubby Cape Purſlane-tree.

POTERIUM, *Burnet.*——Shrubby Prickly Burnet.

PRASIUM, *Shrubby Hedge Nettle.*

PROTEA, *Silver-tree.*—Common Silvery *Protea*, or Changing-tree—Coniferous *Protea.* (*Shrubby.*)

PUNICA, *Pomegranate-tree.*—Dwarf Pomgranate.

RHAMNUS, *Buck-thorn.*——Broad-leaved Indian *Rhamnus*—Zizyphus, or Jojube. (*Underſhrubby.*)

RHUS, *Sumach.*—African Hoary Sumach, and varieties—African Narrow-leaved Sumach, and varieties—Shining-leaved African Sumach. (*Shrubby.*)

ROYENA, African Bladder-nut. (*Shrubby.*)

RUMEX, *Dock.*—Sorrel-tree.

RUSCUS, *Knee-holly.*—Alexandrian Laurel—Tongue-upon-tongue Laurel: they will alſo grow in the full air, but are liable to injury from froſt. (*Shrubby.*)

SALVIA, *Sage.*—Shrubby African Golden-flowered Sage—Shrubby African Blue-flowered Sage—Canary Sage—Mexican Sage. (*Shrubby.*)

SCABIOSA, *Scabious.*—Shrubby Scabious.

SCLARIA, *Clary.*—Shrubby Mexican Clary.

SELAGO.—Corymboſe Selago. (*Underſhrubby.*)

SEMPERVIVUM, *Live-ever*, or *Houſe-leek*. Tree Houſe-leek—Variegated Tree Houſe-leek—Leſſer Canary-tree Houſe-leek. (*Succulent.*)

SENECIO, *Groundſel*. — Shrubby African Groundſels.

SIDERITIS, *Iron-wort*.—Canary Iron-wort—Cretan Iron-wort. (*Shrubby.*)

SMILAX, *Rough Bindweed*. —— Chineſe Rough Bindweed, or China-root—Laurel-leaved Rough Bindweed; with ſeveral varieties of each. (*Underſhrubby.*)

SOLANUM, *Night-ſhade*.—*Amomum Plinii*, Baſtard Capſicum, or Winter Cherry—African Jagged-leaved Solanum, or *Pomum Amoris*—American Twin-fruited Solanum—Thorny, Downy Night-ſhade. (*Shrubby and herbaceous.*)

STOEBE.—Baſtard Elichryſum. (*Underſhrubby.*)

TANACETUM, *Tanſey*.—Shrubby Æthiopian Tanſey—Underſhrubby Samphire-leaved Tanſey—Tree Tanſey.

TARCHONANTHUS.——Shrubby African Flea-bane.

TETRAGONIA.—Shrubby *Tetragonia*.

TEUCRIUM, *Germander*.—Spaniſh Tree-Germander—Broad-leaved Tree-Germander—*Polium*, or Mountain Poly.—*Murum*, or Syrian Maſtich. (*Shrubby and Underſhrubby.*)

TROPÆOLUM, *Indian Creſs*.—Double Indian Creſs, or *Naſturtium*. (*Herbaceous.*)

VITEX, *Chaſte-tree*.—Ever-green Chaſte-tree.

ULEX, *Furze*, or *Whins*.—African Berry-bearing Furze. (*Shrubby.*)

XANTHOXYLUM.—Tooth-ach-tree.

XERANTHEMUM.—Broad-leaved *Xeranthemum*—Narrow-leaved *Xeranthemum*—Trailing *Xeranthemum*. (*Shrubby.*)

YUCCA, *Adam's Needle*.——Common Adam's Needle——Thready-leaved Adam's Needle—Aloe-leaved *Yucca*—Dragon tree-leaved Yucca. (*Shrubby ſtemed and ſucculent.*)

ZYGOPHYLUM, *Bean Caper*.——Seſſile-leaved Bean Caper—Purſlane-leaved Bean Caper. (*Shrubby.*)

With reſpect to the general culture of the above liſt of Green-houſe exotics, they muſt be kept conſtantly in pots or tubs, for moving them into ſhelter in winter, and into the open air in ſummer; for being all exotics from the warm parts of the world are of tender quality here, and conſequently not able to live in the open air in the winter, therefore requiring the protection of the Green-houſe during that ſeaſon, are denominated Green-houſe plants.

Moſt of them will proſper in any good rich earth of a garden; ſome ſorts, however, require a particular compoſt, which will be always exhibited under each particular article; and moſt of the ſucculent tribe, as being replete with moiſture, ſhould always be planted in a dry, poor, lean, rubbiſhy ſoil. See COMPOSTS.

As to the pots and tubs to contain the plants, they muſt be of different ſizes, according to the ſize and nature of the plants; which as they advance in growth, ſhould have larger pots, &c. accordingly; and when they become too large for the pots, they muſt be ſhifted into tubs, hooped with iron, with two iron handles to each at top. See POTS and TUBS.

In planting the different ſorts, be careful that the pots or tubs have holes at bottom for the diſcharge of redundant moiſture; obſerving, however, previous to putting in the earth, to cover each hole with a piece of tyle or oyſter-ſhell, to prevent their being ſtopped up with the earth, and the earth from being waſhed out, &c.

As to the mode of propagating the various ſorts, it is in ſome by ſeed, others by layers, cuttings, ſlips, off-ſets of the roots, &c. and ſome by grafting, inoculation, and inarching; all of which is illuſtrated under their ſeveral genera.

And as to the mode and times of planting each ſort, it is alſo fully explained under their ſeveral genera as they occur in the courſe of this work.

Therefore, ſuppoſing all the ſorts to be now raiſed, and planted in their proper pots, ſoils, &c. we will juſt give ſome hints for their general management.

*Removing them into the Open Air in the Summer, and Management there.*

All the ſorts ſucceed in the open air from May, or beginning of June, until October; and from October until May or June again, as juſt obſerved, require the ſhelter of the Green-houſe: therefore, about the middle of May is the time to remove the more hardy kinds of Green-houſe plants, in their pots, into the full air, ſuch as all the varieties of Myrtles, Geraniums, Oleanders, Ciſtuſes, Phlomiſes, Shrubby Aſter, Tree-wormwood,

Tree-

Tree-Candy-tuft, Yellow Indian and Spaniſh Jaſmines, Indian Bay, &c. and in the laſt week in May or firſt in June, according as the ſeaſon proves more or leſs favourable, bring forth all the other ſorts; but this ſhould not be done until the ſeaſon is become perfectly ſettled, and a fair proſpect of ſummer being arrived, for we have often very cold nights, and frequently froſty mornings, in May, and even in the beginning of June, which, if the plants were fully expoſed, would pinch the ends of their young ſhoots and leaves, and greatly deface them. It is a good obſervation, that when the mulberry-tree, which is a late ſhooter, begins to expand its leaves, is a certain ſign of the approach of ſummer, and ſettled weather, fit to begin moving out moſt ſorts of Green-houſe exotics. A mild warm day ſhould be choſen for this work, and if a warm rain it will be of much advantage, as it will waſh the leaves and branches from the duſt they have contracted, and greatly refreſh the plants.

When they are firſt brought out, it is proper to place them in ſome ſheltered ſunny place, for a fortnight, till they are inured to the open air; then you may place them in any open expoſure where you deſign they ſhall remain for the ſummer.

As ſoon as they are brought out, let them be cleared from all dead leaves, and all dead wood; and let the earth on the ſurface of the pots be ſtirred, taking a little of the old out, and add ſome freſh mold in its ſtead, which will prove very beneficial; then give a moderate watering, not only to the mold, but alſo all over the heads of the plants, to clean them effectually from all dirt and filth they may have contracted during their reſidence in the Green-houſe.

As to the diſpoſition of thoſe plants in the full air, no general rule can be exhibited, it is according to fancy. Sometimes ſome of the handſomeſt plants are placed to adorn ſpacious fore-courts, and ſometimes are arranged on each ſides of grand walks contiguous to the main habitation, and others near ornamental garden-buildings; they are alſo ſometimes diſpoſed in groups or ſmall clumps in the moſt conſpicuous places, in different parts of the pleaſure-ground; exhibiting different ſorts in each group, to cauſe the greater variety.

Having, however, placed the whole abroad for the ſummer, their chief culture is, to ſupply them plentifully with water during that ſeaſon, in hot dry weather: all the woody or ſhrubby kinds in particular, likewiſe the herbaceous kinds that are not very ſucculent, will require it three times a week at leaſt, and in a very hot dry time once a day will be requiſite; the ſucculent kinds muſt alſo have a moderate ſupply of water two or three times a week in dry weather; obſerving that the proper time of the day for watering all the ſorts at this ſeaſon, is, either in a morning before nine o'clock, or in the afternoon after four or five; for if performed in the middle of the day in ſummer weather, the ſun would ſoon exhale great part of the moiſture before it effected its intended operation on the fibres of the plants: this work of watering ſhould be duly attended to in dry weather, for as the mold, roots, and fibres of the plants are circumſcribed within the narrow limits of a pot or tub, the earth contained therein, as well as the fibres, conſequently dries very faſt in ſummer, and neceſſarily requires frequent refreſhments of water, to preſerve that due and conſtant degree of moiſture requiſite for the ſupport of vegetation.

It ſhould be obſerved, that moderate rains ſhould not deter you from watering, eſpecially ſuch plants that have ſpreading heads, which prevents the rains, unleſs very heavy or conſtant, from falling in ſufficient quantities on the earth of the pots, to moiſten it properly.

In hot weather, if ſome mowings of ſhort graſs are ſpread on the ſurface of the orange-tree tubs, and others, it will greatly preſerve the moiſture.

During the ſeaſon it will alſo be good culture to looſen the ſurface of the earth now and then, in ſuch pots and tubs that have a tendency to bind.

*Removing them into the Green-houſe for the Winter, and Management there.*

Towards the latter end of September, or as ſoon as the nights become cold, begin to move into the Green-houſe the more tender kinds of exotics of that department; the ſucculent tribe in particular, ſhould be removed to ſhelter at the firſt approach of exceſſive wet and cold nights. The oranges, lemons, and all the other ſpecies of *citrus*, ſhould alſo be moved into ſhelter in due time, either in the end of September, or early in October, for if they are permitted to remain in the open air till attacked by ſharp weather, it would change the beautiful verdure of their leaves,

leaves, to a ruſty yellow hue, which they would not recover during winter; therefore in October at lateſt, begin to move in the principal plants, the ſucculent and others of the more tender temperature as early in the months as the cold weather begins to come on, and continue moving in all the others as the cold encreaſes, and by the end of the month, or firſt week in November, bring in the whole collection; obſerving according as the time approaches for moving in the different ſorts, to clear them perfectly well from decayed leaves, &c. and let all the pots be well cleaned, and looſen the ſurface of the earth in each pot, adding a little freſh mold thereto, which will prove very beneficial to the plants, as well as add an air of neatneſs and culture. As you bring the different ſorts occaſionally into the Green-houſe, they may be placed promiſcuouſly, till the whole collection is brought in, then ſhould be arranged regular, as they are to remain for the winter; leaving all the windows quite open till that time. When the whole is brought in, or bringing in, let them be diſpoſed in regular order, ſo as to appear to the beſt advantage, both in reſpect to their general arrangement, as well as to exhibit variety, and ſo as each may have an equal portion of ſun and air: let the talleſt plants be therefore arranged in the back, the others in their ſeveral ranks, according to their degrees of height, gradually down to the loweſt in front; and as there is a vaſt variety, both in ſize, ſhape, and colour, of the foliage of the different ſorts, they ſhould be ſo diſpoſed as to ſet off each other, and give a pleaſing variety to the whole; and if poſſible, the plants ſhould ſtand clear of one another; whereby each plant will be ſeparately conſpicuous, and the whole exhibit a greater air of freedom and variety, articles of great elegance, as well as admit an equal portion of ſun and free circulation of air, which will prove beneficial to the health and beauty of the whole collection.

The plants being now all ſtationed in their winter quarters, their principal culture during their reſidence there, is the ſupplying them with freſh air at all opportunities in mild weather, and giving moderate waterings occaſionally, picking off decayed leaves as often as they appear, and making occaſional moderate fires in ſevere weather, alſo ſometimes to diſpel great damps and noxious fogs.

With reſpect to giving air, this ſhould be admitted every mild, calm day, by opening the windows more or leſs, according to the temperature of the weather. When the plants are firſt houſed, they ſhould have as much free air as the nature of the ſeaſon will admit, by opening the windows every mild day to their full extent; and if the air is quite temperate, they may remain open on nights for the firſt week; but in cold nights, let them be conſtantly ſhut: this work of admitting air muſt be conſtantly attended to all winter, for without a due portion of this eſſential article in mild weather, the plants would looſe their fine verdure, and aſſume a ſickly yelloviſh colour, become diſeaſed, and the young ſhoots grow mouldy and rot off, and the leaves of the plants drop; therefore, never omit every mild day, when not very damp or ſoggy, to open ſome or all of the windows, little or much, according as the air is, more or leſs temperate; and the proper time of day during winter, for this is from about eight, nine, or ten in a morning, till three, four, or five in the evening, according to the mildneſs of the day: but as the days lengthen, and the warm weather encreaſing, give more air in proportion, earlier and later in the day as you ſhall judge proper, being careful always to ſhut all cloſe in due time every evening, as ſoon as the ſharp air approaches. In foggy weather it is adviſeable to keep the windows quite cloſe, for the great damps occaſioned by fogs is very pernicious to theſe plants, whilſt they are confined in the houſe; likewiſe in all froſty weather keep the houſe all cloſe, except the froſt is moderate, and the middle of the day ſunny and warm, when ſome of the windows may be opened a little, but ſhut them cloſe again if the ſun is clouded, and at any rate before the air changes cold; and in ſevere weather, let the ſhutters, &c. be alſo ſhut every night, alſo occaſionally on days. As the ſpring approaches, and the weather grows warmer, enlarge the portion of air accordingly, admitting it alſo, both earlier in a morning, and continue it longer in the evening, as the days lengthen, for then the plants will begin to aſſume a growing ſtate, and a conſiderable portion of air is requiſite every mild day, both to ſtrengthen the new ſhoots and inure the plants by degrees to the air, againſt the time for removing them into it fully again for the ſummer.

Watering during their abode in the Green-houſe will alſo be neceſſary to moſt of the ſorts, but which muſt be afforded them as ſparingly as poſſible during the winter months, and ſcarcely any ſhould be given when the houſe

houſe is obliged to be ſhut cloſe through the ſeverity of the weather: there are no certain rules to be given for the application of this article, ſome plants may probably require a little water once a week, or ten, or twelve days in mild weather, ſuch as the orange and lemon-trees, myrtles, oleanders, ſhrubby-geraniums, and other woody kinds; all that is neceſſary is, juſt to preſerve the earth very moderately moiſt; therefore muſt examine the pots and tubs always with proper attention, and give water to ſuch only as you ſee are in want thereof, not to make it a rule to give it whether they want it or no. The herbaceous kinds ſhould be rather more ſparingly watered than the ſhrubby ſorts; and all the ſucculent tribe ſhould have water but ſeldom, ſome not oftener than once a fortnight or three weeks, and that always but very ſparingly at each time; and ſome that are very ſucculent will require but very little from November till March; and indeed all the ſucculents ſhould only have it now and then at this ſeaſon, when the earth in the pots appears very dry.

In performing the work of watering in general, be particularly careful to water with great moderation whilſt the plants remain in the Green-houſe, for if you once over-wet the earth at this ſeaſon, it will remain ſo for a long time, and by chilling the tender fibres of the roots, the conſequence will often prove the loſs of the leaves of many of the plants, and even the death of ſome ſorts.

A ſunny day from about eleven to two o'clock, is the proper time for watering during their reſidence in the Green-houſe.

Let ſoft water if poſſible be uſed, or at leaſt ſuch that has been expoſed to the air two or three days to ſoften it a little.

In froſty weather great attention is requiſite to keep all the windows cloſe, night and day, unleſs the froſt is but moderate, as before obſerved, and the middle of the day ſunny and warm, when ſome part of the houſe may be opened a little for two or three hours, having particular regard to ſhutting all cloſe in due time in the afternoon, before the air changes ſharply cold: and in very ſevere froſts keep all cloſe night and day, and let the ſhutters, if any, or other covers of canvas or mats, be alſo uſed every night; alſo occaſionally in day time, when the weather is intenſely ſevere, and no ſun appears, and no flues for fires to keep out the froſt; obſerving however the ſhutters or other ſhelters beſides the glaſſes, muſt be uſed as little as poſſible in the day, only in caſes of particular neceſſity as above, for every opportunity ought to be taken for the admiſſion of light and freſh air, as much as the temperature of the weather will poſſibly admit; as moſt of the plants only want protection from froſt, and that the common ſhelter of the houſe, with ſhutting the ſaſhes cloſe every night, will be always ſufficient, except in extremely piercing weather, when the ſhutters, &c. muſt alſo be occaſionally uſed; and if none, nail mats againſt the outſide of all the glaſſes, eſpecially thoſe at top, which form a half roof, if any, for the perpendicular froſts will be more powerful in that part than in the upright glaſſes in front.

During ſevere froſty weather, if your Green-houſe is accommodated with flues for fires, it will be adviſeable to make a moderate fire at ſuch times when the froſt cannot be otherwiſe kept out, eſpecially on nights; but this muſt by no means be continued longer than juſt neceſſary to guard againſt very ſevere froſts. In default of flues, fires are burned within the houſe, in pots placed in different parts: charcoal is often uſed, tho' its ſuffocating vapours in cloſe ſhut houſes, is often attended with danger both to the gardener and plants, ſo that coal, or peat, or turf fires will be better; but there is nothing ſo effectual and eaſy as flues for making fires in ſevere froſts.

Likewiſe in very cold foggy, damp weather, a moderate fire now and then in the flues, will prove very beneficial in expelling the damp unwholeſome vapours, ſo pernicious to all plants.

Whilſt the plants remain in the Green-houſe, all decayed leaves, &c. ſhould be conſtantly picked off, being neceſſary both to preſerve the beauty and health of the plants; decayed leaves of the ſucculent kinds ſhould be cut off cloſe with a ſharp knife; the plants in general ſhould likewiſe be occaſionally cleaned from any filth they may contract in the houſe, ſuch as duſt, cob webs, &c.

The above directions are principally all that are neceſſary during the continuance of the plants in the Green-houſe.

In May and June they are to be removed into the open air again, and managed as before directed in their ſummer culture.

*Some Obſervations on their General Culture.*

The plants in general will want ſhifting occaſionally into larger pots and freſh earth, according

according as they advance in growth; ſome that are faſt growers, ſuch as *geraniums*, *&c.* will require ſhifting annually, others every other year, though an annual ſhifting will prove beneficial to moſt of the ſorts, obſerving, in the work of ſhifting, moſt of them may be ſhifted with the ball of earth about their roots entire, others that are rather weak and ſickly, will require ſhifting into entire freſh earth.

The proper time of year for ſhifting all the ſorts is April and May, or when they are removed into the open air for the ſummer; in doing of this, the plant ſhould be drawn out of its preſent pot or tub with the ball of earth about its roots entire, then pare off all the matted fibres around the outſide of the ball, and clear away alſo ſome of the old earth at ſides, bottom, and top: then having the new pot and freſh earth ready, cover the holes at the bottom of the pots, &c. with pieces of tyles or oyſter-ſhells; and having then put in ſome of the freſh earth, place the plant in the pot and fill up the vacancy all around with more freſh compoſt, bringing it an inch over the top of the ball, and give directly a good watering, to ſettle the earth cloſe in every part; after this it is neceſſary to place the plants to have ſhade from the mid-day ſun for a fortnight.

Such plants that are become of a weak ſickly nature, ſhould, at ſhifting, have all the earth taken clean from about their roots, then waſh the roots, and plant them into entire freſh earth.

The larger ſorts of plants, ſuch as the orange-trees, lemons, citrons, and others of large growth, ſhould, when grown large, be ſhifted from pots into tubs hooped with iron, having two iron handles at top, for the convenience of lifting them in and out of the Green-houſe, for ſometimes they grow to ſo large a ſize, having tubs in proportion, that they require two, and ſometimes three or four men to move them in and out.

Plants of any of the ſorts which are not ſhifted annually, ſhould, in ſpring, have the earth in the top of the pot or tub looſened to a little depth, alſo a little way down round the ſides, taking the looſened earth out, and in its ſtead, add a due quantity of freſh mould, giving it directly a little water to ſettle it cloſe, which will prove a very beneficial dreſſing, and ſhould never be omitted to thoſe that are not ſhifted.

Likewiſe, at any time of the year, when you perceive the ſurface of the earth aſſume a binding property, whether in the ſhifted or unſhifted plants, it is of much ſervice to ſtir it an inch depth occaſionally, and may add a little freſh compoſt, or none at all, as you ſhall judge neceſſary.

Keep all the ſorts conſtantly cleared from the decayed leaves and dead wood, and their heads and every part clean from duſt and other filth, by occaſionally waſhing them with water, which in the hardy ſorts is done by occaſional waterings all over their heads, others when very foul, by waſhing their leaves one and one, with a ſponge and water, eſpecially in winter, and is often neceſſary to the oranges and lemons, and other large-leaſed kinds.

When the heads of any of the ſhrubby plants are become very irregular or ſhabby, the branches may be pruned ſhorter or longer as it ſhall ſeem neceſſary, in April or May, and they will branch out into young wood in ſummer, which you may regulate as occaſion may require.

Never clip the heads of any of the plants with garden ſhears, nor by any mode of pruning, endeavour to trim them into any regular figure, as ſometimes practiſed, but let every ſort aſſume its own natural growth, only juſt uſing the knife to regulate any very irregular or rambling ſhoot or branch, or to thin out ſome where too much crowded, and to cut out all dead wood.

GREWIA, *(Grewia.)*

It conſiſts of two tender ſhrubs for the green-houſe and ſtove, riſing five or ſix feet high, ornamented with oval and ſpear-ſhaped leaves, and pentapetalous flowers.

Claſs and order, *Gynandria Polyandria.*

*Characters.*] CALIX, five ſpear-ſhaped, ſpreading coloured leaves. COROLLA, five ſpear ſhaped petals. STAMINA, many gynandrous filaments, and roundiſh antheræ. PISTILLUM, a roundiſh, germen, filiform ſtyle, and quadrifid ſtigma. PERICARPIUM, a four-lobed, quadrilocular berry, and four globular ſeeds.

The ſpecies are;

[1]GREWIA, *Occidentalis.*

*Occidental Grewia.*] Grewia, with a woody, ſmooth, dark-brown ſtem, branching eight or ten feet high, oval, acute, crenated leaves; and bright purple flowers ſingly from the ſides of the young branches.

[a]GREWIA, *Orientalis.*

*Oriental Grewia.*] Grewia, with a woody brown ſtem branching out laterally five or ſix feet high; oval, ſpear-ſhaped, ſerrated, alternate leaves, and greeniſh flowers in cluſters from the ſides and ends of the branches.

Theſe ſhrubs flower in ſummer, but are not ſucceeded by ripe berries in England.

They are propagated by ſeed, layers, and cuttings; ſow the ſeed in pots, and plunge them in a hot-bed; layers may be performed in ſpring, and they will be rooted by the end of ſummer; and cuttings may be planted in pots alſo in ſpring, plunging them in a hot-bed; they will be rooted in two or three months.

GROVES, plantations of ſtately trees diſpoſed in rows on graſs-ground in gardens, and parks, contiguous to ſpacious lawns, &c. deſigned both for ornament, and to form ſhade from the ſummer's ſun.

In extenſive gardens Groves may be formed in different parts of the ground; a grand one contiguous to the dwelling, where it may be conſpicuous, is proper, both to effect ornament, and that company may ſoon arrive under its ſhade for occaſional walking in the heat of ſummer; others may be ſtationed more remote from the habitation on the boundaries of lawns or other open ſpaces of graſs, and near garden buildings, ſuch as temples and other ſacred ſtructures; for Groves whereſoever ſituated, always exhibit an air of magnificence, and are the greateſt ornaments to ſpacious gardens, and every ſuch garden is incomplete without one or more of theſe plantations.

The trees to form Groves are uſually diſpoſed in ſeveral ſtraight rows, and at ſuch diſtances as their branches may ſo far approach each other, as to afford a moderate ſhade from the ſummer's ſun, yet ſo diſtant, that each tree may have full ſcope to ſpread its branches all around, ſo as to exhibit their ſtraight trunks and ſpreading heads diſtinct, according to their natural growth; that a due portion of air and light may be admitted to promote the growth of the graſs between and under them, ſo as to form a cloſe, firm ſward, and perpetual verdure; Groves are alſo ſometimes formed with the trees placed irregularly, and the ſpaces between planted with various ſhrubs to form under-wood, and with ſerpentine gravel walks variouſly winding through the whole.

But Groves are of two ſorts, open Groves, and cloſe Groves.

*Open Groves.*—The largeſt growing foreſt-trees with the moſt ſpreading heads, ſhould be choſen for ſuch plantations, and diſpoſed in ranges from fifteen to twenty or thirty feet wide, and the ſame diſtance between the trees in each row, that each tree, as above obſerved, may have full ſcope to form a ſpreading head, and ſo as to admit of the growth of graſs under them ſufficiently to form a good ſward, and conſtant verdure; but if a ſhady Grove is required to be formed as ſoon as poſſible, one may be planted contiguous and diſtinct from the above, arranging the rows only at ten or fifteen feet diſtance, whereby it will afford ſhade ſeveral years before the other, and as it will always exhibit a more dark and gloomy ſhade for ſolitude, it will exhibit the greater variety, with the other more open Grove. Open Groves chiefly for ſhade are alſo formed by diſpoſing all the trees irregularly, both that they may produce an imitation of a natural Grove, and ſooner afford a perfect ſhade and gloomineſs, which they will conſiderably ſooner than in ſtraight rows, though Groves deſigned principally for ornament, having the trees diſpoſed in wide ranges, appear generally with a greater air of grandeur as open Groves; but where there is extent of ground to work upon, open Groves may be formed in all the above methods.

*Cloſe Groves.*—Theſe are formed of large trees irregularly diſpoſed, having the ground between them filled with various under ſhrubs and gravel or ſand walks, continued through them in winding or ſerpentine turns; and which kind of Groves are ſometimes continued round the out boundaries of a garden, ſo as to afford ſhady and private walking, as well as ſhelter from the inclemency of cold cutting winds; and the various ſhrubs forming the under-wood will have a delightful effect in the whole excurſion of the walk.

But with reſpect to Groves in general, it ſometimes happens when a garden is to be laid out, that large old trees are found growing upon the ſpot, in a proper ſituation to conſtitute a Grove, which if they do not too greatly approach to the habitation, nor obſtruct any principal proſpect or diſtant view, they ſhould be preſerved with the utmoſt care; and at any rate it will be better to diſpenſe with many inconveniencies, than to deſtroy them, which would require an age or

two to form the like with any young plantation; and that although the trees ſhould ſtand ever ſo irregularly or cloſe, they may be ſomewhat regulated by grubbing up the moſt irregular and ill formed, or thinning out ſome, where they form too cloſe a thicket for the deſign, either for an open or cloſe Grove.

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# H.

HÆMANTHUS, Blood-flower.

The plants are bulbous-rooted, herbaceous, flowery perennials for the ſtove, having the roots crowned with long leaves, and erect flower-ſtalks a foot high, terminated by cluſters of monopetalous, ſix-parted, liliaceous-ſhaped red flowers.

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX, a large ſix-leaved, permanent involucrum, ſhaped like an umbel. COROLLA, is one erect petal, divided into ſix parts. STAMINA, ſix awl-ſhaped filaments, and oblong incumbent antheræ. PISTILLUM, a germen under the corolla, ſingle ſtyle, and ſtigma. PERICARPIUM, a roundiſh trilocular-berry, and three ſeeds.

The ſpecies;

[1]HÆMANTHUS, *Coccineus.*

*Scarlet Cape Hæmanthus, or Bloody Lily.*] Hæmanthus with a large, tunicated, bulbous root; crowned by tongue-ſhaped, flat, ſmooth, fleſhy leaves, ſpreading on the ground, and an upright, thick, ſpotted ſtalk, from three to ten or twelve inches high, terminated by a large cluſter of blood-red flowers in autumn.

[2]HÆMANTHUS, *Puniceus.*

*Red Guinea Hæmanthus, or Baſtard Dragon.*] Hæmanthus with a large, bulb-like, fleſhy root, ſending up thick, fleſhy ſtalks a foot high, ſpotted like the dragon-plant, and garniſhed with lanceolate-oval waved, erect leaves, and large umbellate cluſters of red flowers in ſummer.

[3]HÆMANTHUS, *Carinatus.*

*Carinated-leafed Cape Hæmanthus.*] Hæmanthus with a large, bulbous root, crowned by three or four long, narrow, carinated, or keel-ſhaped leaves; an upright, thick ſtalk a foot high, terminated by a cluſter of pale-red flowers in autumn.

[4]HÆMANTHUS, *Ciliaris.*

*Ciliated Cape Hæmanthus.*] Hæmanthus with a large, bulbous root, tongue-ſhaped, ciliated leaves, and an upright, thick ſtalk a foot and half high, terminated by reddiſh flowers in autumn.

All theſe plants are exotics of Africa, and require the protection of a hot-houſe in this country, ſo muſt be always kept in pots, and continued in that department, where if plunged in the bark-bed, they will flower annually, and make a fine appearance.

They are herbaceous, bulbous-rooted perennials, durable in root, but renew their leaves and ſtalks annually, obſerving, that the autumnal flowering kinds generally flower before the leaves ariſe; and when the flower fades, the leaves come up, continue all winter, and decay in ſpring or early in ſummer.

Their flowers are extremely ornamental, appearing in large cluſters, protruded from a large permanent involucrum; each ſeparate flower is of one petal, divided into ſix parts; ſee the *Characters*, and are ſucceeded by red berries, but rarely any but the ſecond ſort ripen in perfection in England.

All the ſorts muſt be potted in light earth, and the proper time for planting, tranſplanting, or to new-pot them is in ſpring, or early in ſummer, when their leaves decay, and the roots may be had of moſt of the nurſery-men, who propagate them for ſale; tho' they encreaſe but ſlowly here, ſo are often procured from the Cape of Good Hope, where they naturally grow, they ſhould be planted as ſoon as they arrive, obſerving to ſupply them with water, which however muſt be but ſparingly in winter.

They may be propagated by off-ſets from

the roots, when their leaves, &c. decay, like bulbs; and may alſo be propagated by ſeeds ſowed in pots of light ſandy earth, plunging them in the bark bed in the ſtove.

HÆMATOXYLUM, Blood-wood, or Log-wood.

It furniſhes one ſpecies, an exotic-tree of South America retained here in ſtoves for variety.

Claſs and order, *Decandria Monogynia.*

*Characters.*] CALIX, is five-parted, and permanent. COROLLA, five oval petals. STAMINA, ten long filaments, and ſmall antheræ. PISTILLUM, an oval germen, ſimple ſtyle, and thick indented ſtigma. PERICARPIUM, an unilocular capſule and compreſſed ſeeds.

There is but one ſpecies, viz.

HÆMATOXYLUM, *Campechianum.*

*Campeachy Hæmatoxylum, or Log-wood.*] Hath an irregular, crooked ſtem, riſing fifteen or twenty feet high, ſends out many crooked branches armed with thorns, and garniſhed with pinnated leaves of three or four pair of lobes; and from the axillas erect bunches of pale yellow flowers, ſucceeded by oblong capſules containing the ſeeds, but do not produce any in this country.

The wood of this tree is in great eſtimation among the dyers, for dying purple and the fineſt blacks, and grows in amazing plenty in the Bay of Campeachy, and other parts of the Spaniſh Weſt Indies, from whence the wood is ſent to Europe as a valuable commodity, and is become a conſiderable branch of trade.

A few of the plants are preſerved here in hot-houſes for variety, where they grow freely, and attain ſeveral feet in height.

It may be propagated by ſeeds procured from abroad, ſowing them in pots, and plunge them in a bark hot-bed: when the plants are three inches high, prick them in ſeparate ſmall pots, and replunge them in the bark-bed in the ſtove.

HALLERIA, African-fly Honey-ſuckle.

One ſpecies, an ever-green ſhrubby plant for the green-houſe, conſtitute this genus.

Claſs and order, *Didynamia Angioſpermia.*

*Characters.*] CALIX is monophyllous, three-parted, and permanent. COROLLA one ringent, or grining petal, having the limb erect and four-parted at the top; the upper part longeſt, blunt, and emarginated; the ſide ones ſhort and pointed; and the lower one very ſhort and acute. STAMINA, two long and two ſhort filaments, and didymous antheræ. PISTILLUM, an oval germen, long ſtyle, and ſimple ſtigma. PERICARPIUM, a roundiſh bilocular berry, and two hard ſeeds.

The ſpecies is;

HALLERIA *Lucida.*

*Lucid or Shining-leaved Halleria.*] Halleria, with a wooddy ſtem, branching ſix or ſeven feet high; oval, ſawed, ſhining green leaves placed oppoſite; and red flowers growing ſcatteringly along the ſides of the branches in June, ſucceeded by roundiſh berries in autumn.

This is an ever-green ſhrubby plant of Africa, requiring ſhelter of a green-houſe here in winter, and muſt be always kept in pots, and managed as other exotics of the green-houſe department, and will make a pretty variety in that collection.

The flowers are of the grining tribe, being formed of one irregular petal cut into four unequal ſegments, and reſemble ſome ſorts of honey-ſuckles. See the *Characters.*

It may be raiſed from ſeed, in a hot-bed in ſpring; alſo by cuttings of its young branches, planted in pots in April, May, or June, and plunged in a hot-bed, giving occaſional ſhade and water.

HAMAMELIS, Witch Hazel.

It furniſhes one hardy deciduous ſhrub for the ſhrubbery.

Claſs and order, *Tetrandria Digynia.*

*Characters.*] CALIX, a triphyllous involucrum, and a double proper cup, or perianthium, having the exterior part of two, and the interior part of four leaves. COROLLA, four long narrow reflexed petals, and four nectariums adhering thereto. STAMINA, four narrow filaments, and horned, reflexed antheræ. PISTILLUM, an oval hairy germen, two ſtyles, and capitated ſtigmas. PERICARPIUM, none. SEMINA, an oval nut ſituated in the calix.

The ſpecies is;

HAMEMELIS *Virginiana.*

*Virginian Hamamelis.*] Hath a ſhrubby or wooddy ſtem, branching three or four feet high; oval, indented, alternate leaves, reſembling thoſe of the common hazel, and flowers growing in cluſters from the joints of the young branches; appearing at the fall of the leaf in November and December, but producing no ſeeds in England.

This is an American ſhrub, of hardy growth; is admitted here in our ſhrubberies to

to increaſe the variety in the collection of hardy ſhrubs in extenſive gardens; but its flowers are more ſingular for their appearance in winter, when the leaves are fallen, than their beauty.

It is propagated by ſeed, and by layers of its young branches.

By Seed.—This is procured from America; ſow it in an eaſterly border, half an inch deep, they will come up the ſecond ſpring, not before, ſo keep the ground clean from weeds till then; when, if the ſeaſon proves very dry, give moderate waterings, alſo in ſummer; and when two years old, tranſplant them in nurſery rows.

By Layers.—In autumn, or even in winter, and early in ſpring it may be done, and the young twigs of the laſt ſummer's ſhoot ſhould be choſen, giving them a ſlit at a joint, lay them in the earth, and they will be rooted, and fit to tranſplant into the nurſery by autumn following.

HEDERA, Ivy, the Ivy-tree.

This Genus furniſhes two ſhrubby climbers, one an ever-green, the other a deciduous plant, both celebrated for their climbing property, in aſcending to the top of the higheſt trees, buildings, or any adjacent ſupport, rooting in the bark of the trees, walls, &c. as they aſcend.

Claſs and order, *Pentandria Menogynia.*

*Characters.*] CALIX, a ſmall many-parted involucrum to each corymbus of flowers, and a five-parted cup to each floret. COROLLA, each floret compoſed of five oblong ſpreading, incurved-pointed petals. STAMINA, five awl-ſhaped filaments, and incumbent Antheræ. PISTILLUM, a turbinated germen, ſhort ſtyle, and ſingle ſtigma. PERICARPIUM, a globular unilocular berry, and five ſeeds.

The ſpecies are;

[1]HEDERA, *Helix.*

*Helix*, or *Common Evergreen Ivy-tree.*] Hath ſhrubby, long, flexible, rooting ſtalks, climbing upon ſupport many feet high, by their cirrhoſe roots emitted from the ſides of the ſtalks and branches, ſtriking root in the bark of trees, walls, &c. as they aſcend; garniſhed with large lobated, and ſometimes oval leaves, and corymboſe cluſters of greeniſh flowers at the ends of the young ſhoots, ſucceeded by round cluſters of berries ripening to a black, and a yellow colour in the varieties.

*Varieties of this are*;] Common black-berried ivy-tree—Silver-ſtriped-leaved ivy——Gold-ſtriped ivy——Yellow-berried ivy.

All theſe varieties are ever-green; they flower in September, and the berries continue their growth all winter, and ripen towards ſpring, which in contraſt with the leaves exhibit a delightful variety; but the yellow-berried kind is rare in this country.

[2]HEDERA, *Quinquefolia.*

*Five-leaved deciduous Hedera, commonly called Virginia Creeper.*] Hath ſhrubby very long ſlender rooting ſtalks, climbing upon ſupport an hundred feet high or more, by their cirrhoſe-roots from the ſides of the ſtalks, ſtriking root in walls, &c. as they aſcend; garniſhed with quinquefoliate deciduous leaves, being compoſed of five oval ſerrated lobes, cloſely covering all the ſtalks and branches in ſummer, dying away to a reddiſh tinge in autumn.

Both the above ſpecies are ſhrubby and durable in ſtem and branches; the firſt and varieties are ever-green; the ſecond is deciduous, dropping its leaves in autumn; are both exceedingly hardy, proſper almoſt any where, and are remarkable for their ſingular property of emitting rooting cirrhi all along the ſides of their ſtalks and branches, ſtriking root in any neighbouring ſupport, thereby climbing to a prodigious height.

The firſt ſpecies, *Hedera Helix*, or common Ivy, is well known to all, by its growing wild in our woods, hedges, and upon old walls and other buildings, &c. eſpecially the common green ſort, which by its climbing ſtalks and branches rooting all along in the bark of the adjacent trees, &c. aſcends and ſurrounds their ſtems, and mount to their tops; alſo over-runs walls, pales, and the whole ſides and tops of houſes, rearing its head often above the chimney, and frequently aſcends to the very top of church-towers in the country; cloſely attaching itſelf to its ſupport by its cirrhoſe-roots emitted from all the ſtalks and ſhoots in their progreſs of climbing; and having reached the top of its ſupport, of whatſoever kind, it there forms a ſhort woody trunk, and large buſhy head. In default of ſupport, it will run upon the ground, branching and rooting as it advances, and ſoon cover a large ſpace; therefore, with reſpect to its uſe in gardening, it may be planted to cover the ſurface of unſightly walls, old pales, and the like; which it will ſoon effect with little trouble; it is alſo excellently

ly adapted to over-run grottos, caves, cots, hermitages, root houſes, artificial ruins, &c. to give them a more rural appearance; likewiſe may be planted here and there in wilderneſſes, cloſe groves, ſhady walks, and other places of ſolitude, to run up large trees; and for variety may ſtation a plant here and there in open ſhrubberies, placing a ſtout ſtake or poſt for it to climb upon, which it will ſoon ſurround and hide, and rear its head above it, and form a thick buſh at top; it may alſo be trained up to a ſtem, and made to form a buſhy head. Thus may the Ivy-tree, though a common wild plant, be employed in our gardens, but its commonneſs rendering it of little eſtimation with moſt, it is ſeldom cultivated: all the varieties, however, are beautiful ever green climbers; the ſtriped-leaved kinds in particular have ſingular elegance, when trained againſt walls in any conſpicuous ſituation; and all the ſorts may be raiſed abundantly by cuttings of their ſhoots, which root freely, make amazing progreſs in growth, and faſten themſelves to any ſupport with very little aſſiſtance.

The ſecond ſpecies, *Hedera Quinquefolia*, is an American plant, but ſo hardy that it will proſper any where, and is a true ſpecies of the Ivy, as it climbs and plants its roots into walls, &c. like that plant; is of ſurpriſing quick growth, frequently ſhooting twenty feet or more in one ſummer, ſtriking root into the joints of walls, mounts to the top of the higheſt buildings, branching and ſpreading widely each way; and as it proſpers in any ſituation, is well calculated to plant againſt any unſightly walls or high buildings, to cover them, and for which purpoſe it is greatly uſed in London, no plant being ſo well adapted, as it will thrive in the midſt of that city, amongſt the cloſeſt buildings, and ſoon reach their tops, covering them effectually with its beautiful five-lobed foliage in ſummer.

*Propagation.*

Both the ſpecies and reſpective varieties are propagated with great facility, by cuttings of their young ſhoots in autumn or ſpring in a ſhady border, which will readily take root, and in one year will form good plants, and may then be planted out for good where they are to remain, or remain longer in the nurſery, as may be convenient; cuttings may alſo be planted at once where they are to remain, and they will alſo ſucceed: the common Ivy may alſo be propagated by ſeeds, ſowed as ſoon as they are ripe, in March or April, which, if kept ſhady and moiſt, will often riſe the ſame ſeaſon.

When any of the ſorts are planted againſt walls, &c. they will only require a little conducting at firſt, juſt to nail their firſt ſhoots thereto, they will afterwards plant their roots firmly in the ſupport, and fix themſelves.

HEDGES, growing fences, employed occaſionally both for uſe and ornament, as outward fences to gardens, and to divide the internal parts of the ground.

Growing Hedge-fences are the cheapeſt, the moſt eligible, and ornamental garden-fences that can be employed in ſuch parts where walls, &c. are not particularly neceſſary for wall-trees, and may in ſuch caſes be employed, both as outward fences to garden-ground, nurſeries, and plantations; as alſo to divide, where neceſſary, the different parts of the ground; in both caſes ſerving as a defence againſt men and beaſts, as well as afford occaſional ſhelter and ſhade to particulars, as effectually as the beſt wall or paling fences.

Several ſorts of ſhrub and tree-plants, both deciduous and ever-greens, may be occaſionally employed for hedges, either as outward fences, and for dividing any internal portion of ground.

*For outward Hedges.*

The white-thorn or haw-thorn-tree, forms the beſt outward hedge-fence in the world; which being properly trained by trimming, or clipping annually, is rendered the cloſeſt and hardieſt fence of any other tree yet known; and being very durable, is preferable to all others for outward Hedge-fences both to gardens and fields; alſo for the diviſions of fields, where they are expoſed to cattle; and for either purpoſe a hedge of this ſort is formed by planting young plants or ſets raiſed from ſeed in the nurſery, which when a year or two old, or as big as a gooſe-quill, are of a proper ſize for this uſe; and the methods of planting them is exhibited hereafter; and for particulars in raiſing the plants, ſee CRATÆGUS.

Hedges of this plant are commonly called quick-ſet Hedges, in a cuſtomary or confined ſenſe, though in a general ſenſe it may with propriety be underſtood of all growing Hedges, to diſtinguiſh them from dead-hedges, formed with ſtakes and buſhes.

The black-thorn, or ſloe-tree, is alſo pro-

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per to be employed for field Hedges, and forms a very ſtrong durable fence; but by its producing ſuch abundance of ſuckers from the root, widely on every ſide, as to over-run the adjoining ground, renders it the leſs eſteemed for general uſe; as it is however well armed with thorns, it may be rendered a very good outward fence againſt moſt cattle, or to divide fields, &c. and a Hedge of this tree may be raiſed either by ſowing the ſeed, i. e. the ſloes themſelves, in autumn as ſoon as ripe, in the place where you would form the Hedge, in two drills the whole length, a foot aſunder, and an inch or two deep, covering them over with earth; or you may firſt raiſe the plants in a nurſery, or procure young ſetts from the neighbouring hedges, as this plant never fails affording great abundance of ſuckers or ſpawn, which they ſend up annually from its roots; ſo that having procured of either ſort, plant them in one or two rows the whole length of your intended Hedge. See PRUNUS.

The crab-tree, both of the apple and thorny ſorts of plums, are alſo ſometimes planted for Hedges, and will ſoon grow up; obſerving that plants for this purpoſe ſhould be ſuch as are raiſed from the kernels of the true wild crabs, which generally come more thorney than thoſe of the cultivated kinds, and ſhoot more moderate and cloſe, ſo as to be more readily kept within the proper limits of a Hedge; and a Hedge of them may either be raiſed by ſowing the kernels of the fruit in autumn or winter, in the place where the Hedge is intended, in drills the whole length an inch deep, covering them that depth; or may raiſe plants from ſeed in the nurſery, which when a year or two old, plant out for good. See PYRUS and PRUNUS. A Hedge of theſe plants is only recommended as being of quick growth, and in default of better; and beſides its property as a field-fence, ſome plants of the Hedge may be ſuffered to grow up, aud they will afford an annual crop of crabs for verjuice; and a proper number of the plants may be uſed as they ſtand in the Hedge for ſtocks, to graft either with uſeful family apples, or ſorts proper for cyder.

The elder-tree is alſo frequently uſed for outward Hedges, eſpecially when a fence is wanted as ſoon as poſſible, as it will form the moſt expeditious Hedge-fence of almoſt any tree in the world, though not the moſt effectual nor beautiful; however, where an immediate outward Hedge-fence is required to any out-ground, or plantation, the elder may be made to form a good one in one year, by planting large truncheons, or cuttings of the ſtraighteſt upright ſhoots and branches, from two or three, to ſix feet long, planted either upright a foot diſtance, and wattled along the top to preſerve them firm and even; or may be placed ſlanting acroſs one another chequerwiſe, forming a ſort of lattice-work, which will be the moſt effectual method. In either method of planting, ſharpen the lower ends of the cuttings, making holes to receive them fifteen or eighteen inches deep, either in level ground, or the ſides or tops of banks; they will ready emit roots, and ſhoot ſtrongly at top the ſame year; but for their general propagation, ſee SAMBUCUS.

The alder-tree is alſo proper to plant for Hedges in wet or marſhy ground, as being an aquatic, and will grow by ſmall or large cuttings like the elder, and will ſoon form a fence; and where Hedges are neceſſary by the ſides of rivers, brooks, or other water, this tree is very proper; as its roots and numerous ſuckers ariſing from their lower parts, form ſuch a cloſe thicket, as effectually to preſerve the earth of the banks from being undermined and waſhed away. See BETULA ALNUS.

Holly forms an excellent and moſt beautiful hedge, and is the beſt ever green Hedge that can be planted for an outer Hedge-fence; for it grows very cloſe, and is well furniſhed with leaves, which being armed with thorns, no cattle will brouze upon them; and being always in foliage, affords good ſhelter in winter, and appears ornamental at all ſeaſons. The only objection to a holly Hedge for general uſe, is its flowneſs of growth the firſt four or five years, as rooting but moderately; but when once it has eſtabliſhed itſelf, it makes amends by its progreſs in height, ſtrength and thickneſs; and, as a fence, is equal, if not ſuperior to any other Hedge whatever; and for beauty, may be ſaid to ſurpaſs all, if neatly trained by clipping once or twice annually in ſummer. A Hedge of this ſort is formed either by ſowing the ſeeds at once in the place where you intend to have the hedge, in drills an inch and half deep; or by planting young plants of two or three years old from the nurſery, which is rather the moſt eligible practice, planting them in one or two rows, tho' two rows planted a foot aſunder, and the ſame in each row, will form the thickeſt hedge; but either of which will

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in eight, nine, or ten years form a good fence. For particulars in raiſing the plants, ſee ILEX.

The furze plant is ſometimes uſed for an outward ever green Hedge fence for fields, which, however, makes but an indifferent hedge, being apt to die off in gaps; but as it will grow upon dry banks, or any poor dry ſoil, where ſcarcely any other plant will thrive; it may on that conſideration be uſed for a hedge; which is to be effected by ſowing the ſeeds in autumn, at once in the place where it is deſigned to have the Hedge, in drills an inch and a half deep. See ULEX.

With reſpect to the method of planting the above kinds of Hedges, take the following hints:

All outward Hedges deſigned as fences, ſhould have a ditch and bank; the ditch to be on the outſide, three or four feet wide at top, three deep, ſloping to one wide at bottom, raiſing a low bank on the inſide on which to plant the Hedge, which may be planted either on the ſide of the ſaid inner bank, in two rows one above the other, a foot aſunder, as commonly practiſed for quick Hedges, planting them as you advance in forming the ditch and bank; or may be planted entirely on the top of the bank, firſt forming the ditch and bank, and levelling the top of the bank, ſo as to form a ſort of border; then plant the ſets in one or two rows, the whole length; but two rows a foot aſunder, is the moſt eligible for all outward fences, as it always forms the thickeſt, ſtrongeſt, and moſt effectual Hedge-fence; but the particular method is exhibited below.

As the haw-thorn or white-thorn Hedges, commonly called quick, or quick-ſet Hedges, are the moſt effectual and moſt frequently uſed outward Hedge fence, we will therefore firſt exhibit the method of planting and forming theſe kind of Hedges as outer fences againſt cattle, &c. which to render it more effectual, ſhould always have a ditch and bank as above obſerved; the plants or ſetts for forming the Hedge, are raiſed from the ſeed or haws, as directed under their proper genus. See CRÆTÆGUS *Oxyacantha*; and when from one to two or three years old, about the ſize of a gooſe-quill, or a little more or leſs, are proper ſets for planting out to form Hedges, as obſerved in their propagation. Having your quick ready, then in the place where you intend to plant the Hedge, mark out a ſpace for a ditch, three or four feet wide at top, as before obſerved; which is to be digged three feet deep each ſide, ſloping gradually to a foot wide at bottom, forming a bank along upon the inner edge, on which to bed or plant the quick, which ſhould be planted as you advance in forming the ditch and bank; therefore, having lined out the width of the ditch, then along the inner edge lay a row of ſquare ſpit-turfs graſs-ſide downwards, to form the beginng of the bank, backing it up with ſpits of earth from the formation of the ditch, and top it with a little of the fine mold or crumbs, and then upon this proceed to lay the firſt row of quick: firſt let the ſets be headed to about five or ſix inches, and the roots trimmed, then lay them upon the bed of turf, with their top-ends outward, in an upward direction, about ten or twelve inches aſunder; covering their roots with mould alſo out of the ditch, and then lay another row of turf along upon the necks of the plants, and more mould from the ditch upon, and behind the turf; and when the bank is thus raiſed a foot above the row of ſets, plant another row in the ſame manner, placing each ſet againſt the ſpaces of thoſe of the firſt row, ſo covering them with more earth from the ditch, forming it in a flat bed over the ſets, four or five inches deep; continuing the ditch to the depth of three feet, ſloping each ſide, to one foot width at bottom, and trim up all remaining earth, throwing a ſufficiency behind the top of the banking, to back up the whole even, in a ſort of broad border, all the way along the top, ſloping a little back ſo as to correſpond nearly with the adjoining ground.

But in planting the above kind of Hedge, or any other ſort, for an outward fence, &c. ſome form the ditch and bank firſt, as above, and plant the ſets in two rows along the top; that is, after having formed the ditch and bank, then levelling the top, forming a ſort of border all along a yard wide; plant the ſets along the middle thereof upright, in two rows a foot aſunder, and ſix inches diſtant in each row; the mode of planting to be as hereafter directed; obſerving the ſame when intended to raiſe a Hedge at once from ſeed, ſowed where you deſign the Hedge to be, ſowing them along the top in drills a foot aſunder.

Sometimes when Hedges are deſigned for middle fences to divide fields, a two-ſided bank is raiſed a yard high, and as broad at top, having a ſlight ditch on each ſide; and each

each ſide of the bank is formed with ſquare ſpit-turfs, from the adjoining ground, and the middle filled up with mold from the ditches on each ſide; ſo that, when finiſhed, it forms a yard-wide border all the way along the top; and along the middle of which plant two rows of Hedge-ſets, or ſeed, in drills as before obſerved.

But in places where no ditch, nor raiſed bank is required, as may be the caſe for middle Hedges, in the more interior parts of grounds, eſpecially in gardens; then the place for the Hedge being marked out on the level ground, two or three feet broad, dig it along, one good ſpade deep at leaſt; and then plant your ſets of any ſort in two rows, ranging along the middle, as hereafter directed; or, if you deſign to ſow ſeeds, &c. of any ſort at once, where you intend to have the Hedge, ſow them in two drills, a foot aſunder, the whole length.

Having given directions above for the method of planting the ſets of quick upon the ſide of a ditch and bank, the following hints are of the particular manner of planting any ſorts upon level ground.

With reſpect, therefore, to the particular mode of planting the ſets, or plants of any ſort, for a Hedge upon level ground, either on the top of a bank levelled, or entirely upon the general level ſurface, where no bank is neceſſary, as for middle Hedges in gardens, &c. the following methods are practiſed.—Thathaving, in the place where the Hedge is intended, either upon the top of a bank, or general level, formed a ſort of level border, two or three feet wide the whole length, you may form one or two ſlight narrow trenches, along the middle, for the reception of the ſets; that is, either cut out a narrow trench, ſix or eight inches deep, all the way along, for each row of ſets, making one ſide of each trench upright, as practiſed in planting box-edgeings, ſee Buxus; then place the ſets in the trench againſt the upright ſide, eight or ten inches aſunder, and turn the earth in upon their roots as you go on, and tread it cloſe thereto; and then, if you deſign to plant two rows to form a double Hedge, make another trench a foot from the firſt, and plant it in the ſame manner; or, inſtead of the above method of planting the ſets, they may be trenched in by digging a foot-wide trench all the way along, placing the ſets therein as you go on, in the following manner: with your ſpade chop out, or mark out a trench a foot wide; then, having the plants, begin at one end, dig out a ſpit the width of the trench, and then plant one or two ſets cloſe to the ſides of the trench: but if intended to have a double Hedge, place two ſets ſo as to form two rows; then dig another ſpit, and turn the earth upon their roots; then place two more ſets in the ſame manner, at eight or ten inches diſtance from the firſt two, and turning another ſpit of earth upon them; after theſe two more at the ſame diſtance; and in this manner proceed digging along, and planting the ſets as you advance, till the whole is finiſhed.

In reſpect to the training and general culture of theſe ſorts of Hedges, it muſt be remarked, that all ſuch that are expoſed to cattle, muſt, as ſoon as planted, be fenced either with a ſtake and buſh Hedge, with hurdles, or with rails and open paling, four or five years till the hedge grows up; obſerving not to place the fence too cloſe to the Hedge to interrupt its growth. The Hedge muſt alſo be duly weeded while young, and this ſhould be particularly attended to the firſt two years.

And if deſigned to train the Hedge regular by clipping it with garden ſhears, it ſhould be annually performed in ſummer, obſerving however to top it but ſparingly while it is young, until arrived at its intended height, only juſt trim off the tops of the ſtraggling ſhoots to preſerve a little regularity, and promote lateral wood to thicken it as it advances; and cut it in alſo moderately on the ſides; but when arrived at nearly its proper height of four, five, or ſix feet or more, then trim it cloſe on the ſides and top, annually to preſerve it thick and within its proper bounds, cutting the ſides always firſt as even as poſſible; then the top, which ſhould alſo be cut as even as a line, always cutting in nearly to the old wood of the former year's cut, otherwiſe your Hedge will get too broad, and keep always the top narrower than the bottom.

But as to field Hedges, which are rarely clipped, they grow naked or open at bottom, and will want plaſhing or laying every ſeven, eight, or ten years, to preſerve them thick at bottom, to anſwer the purpoſe of a fence. See Plashing Hedges.

*Internal Hedges, both as Fences and for Ornament.*

Having mentioned above the various ſorts of plants proper to be employed for outward

Hedges, either for gardens or fields, for the purpoſe of ſtrong fences, we now proceed to point out the ſorts for internal or middle Hedges in gardens, either as fences or to form ſhelter, and for ornament.

In former deſigns for gardens, regular Hedges were in great requeſt; almoſt all the different compartments and diviſions of pleaſure-grounds were ſurrounded with Hedges formed of various ſorts of trees and ſhrubs, both ever-greens and deciduous kinds, which being neatly trained and clipped once or twice annually, appeared ſometimes very ornamental in themſelves; but as they ſhut out from view, the various plants and trees growing in the quarters, which were infinitely more agreeable, as garden furniture, than the perpetual ſhew of ſo much Hedge-work obtruding always upon the ſight, they are now almoſt totally excluded our gardens, for they at one time ſo greatly prevailed by way of ornament, that they bounded all the walks, that whereſoever one walked, cloſe Hedges preſented themſelves ever in view on both ſides of the walk, ſix or eight feet high, ſhutting out all other objects from ſight, that it was like walking in a lane between two walls; and the beauty of the internal plantations were loſt to perſons in the walks. The error of ſo many ſurrounding Hedges were ſo evident to perſons of taſte, beſides their ſtiff formal appearance, and expenſiveneſs to keep in order, that they were baniſhed from moſt gardens; and in modern deſigns, conſulting proſpect and rural diſpoſition in imitation of nature, nothing of Hedge-work is admitted, except merely as fences, or for ſhelter, or to hide any diſagreeable object; however, for the ſake of variety ſome Hedge work for ornament might ſtill be introduced in large gardens, in contraſt with rural deſigns, as a little of regular and a little of rural performances in different parts of the garden, will diverſify the general ſcene; obſerving, however, Hedges ſhould be but ſparingly admitted, and never to bound walks, nor ſurround entirely any compartments furniſhed with curious trees or plants, except by way of fence, or for ſhelter, or ſhade where neceſſary.

Tall Hedges of elm, beech, lime, and other deciduous trees, trained forty or fifty feet high or more, were in great repute at one time for ornament, and ſometimes were ſo ſtationed as to exhibit an air of grandeur; but their great height rendering them very expenſive, and troubleſome to clip, they are moſtly diſcontinued.

Hedges in ancient deſigns were alſo formed into various devices of rural architecture, pavilions, cabinets, porticoes, galleries, and other regular performances, which greatly prevailed, and were often trained ſo as to exhibit an air of magnificence as garden furniture; but were as often ſo ill formed, according to the deſign they repreſented, that they were offenſive to ſight, and were rooted out of many gardens, though ſomething of this nature might be introduced with moderation for variety.

As ſeveral different ſorts of trees and ſhrubs, both ever-greens and deciduous plants, are employed in forming garden Hedges, the principal of them are exhibited below, under the heads, Ever-green Kinds, and Deciduous Kinds.

*Ever-green Kinds.*

The principal ever-greens employed for Hedges are:—Holly—Yew—Laurel—Lauruſtinus—Phillyrea—Alaternus—Bay—and Ever-green Oak; all of which will form Hedges from five or ſix, to ten or twelve feet high; and the laſt named ſort, Ever-green Oak, may be lead up to twenty feet: but the holly and yew form conſiderably the beſt Hedges for general uſe. Beſides the above ſeven ſorts for tall Hedges, ſometimes alſo are uſed for lower Hedges:—Ever-green Privet—Tree Box—Juniper—Virginia Cedar—Savin—Roſemary—Pyracantha—and Sea Purſlane Shrub, and ſome other ever-greens of ſimilar growth.

Of the above liſt of ever-greens for Hedges, the holly and yew form the cloſeſt and moſt effectual garden-hedges of any of the ſorts, as they will grow ſo thick and cloſe, that a bird can hardly get into them, and may be trained ten or twelve feet high, or more; tho' from about ſix to eight or nine feet, is the moſt eligible height for theſe kinds of Hedges for general uſe: both the ſorts may be eaſily trained to almoſt any form by an annual clipping, more particularly the yew; but the holly makes rather the moſt eligible Hedge as a fence, and alſo for ornament; but is ſingularly beautiful when the common green ſorts and the variegated kinds are alternately intermixed. The yew, however, as producing the moſt numerous cloſely-placed ſmall ſhoots, thickly ſet with very ſmall leaves, grows

grows the cloſeſt, and is the moſt eaſily trained into any deſired ſhape, of any Hedge in being, as is evident in ſome old gardens, where many of theſe hedges are ſtill retained, exhibiting the remains of the ancient taſte of deſign in gardens; in which ſome are trained into common regular Hedges, and ſome have the hedge-work formed into various ſhapes and figures; as arcades, niches, cornices, porticoes, pilaſters, galleries, figures of men, beaſts, and birds, and many other formal works of art. The yew is alſo a very proper Hedge to plant internally in nurſery grounds for ſhelter to young plants.

To form internal or middle Hedges of theſe two ſorts, plant them in one row, which is ſufficient, along the place where the Hedge is intended; placing the holly at about a foot or a foot and a half diſtance, and the yew the ſame, but if ſpreading plants, two or three feet.

The laurel being a ſingularly beautiful ever-green, adorned with noble large foliage, is ſometimes planted for Hedges; but as it ſhoots vigorouſly, it never grows ſo compact, nor is ſo eaſily kept in form as the two forementioned ſorts; its leaves alſo being very large, when the hedge is clipped with ſhears, they are unavoidably cut through, and ſo ſtubbed and mangled as to have a very diſagreeable appearance; therefore, inſtead of performing their annual training with ſhears, ſome trim off the ſhoots with a knife, to preſerve the leaves entire. This plant is alſo proper to train Hedge-faſhion to hide any diſagreeable fence, and will grow either under trees in the ſhade, or in an open expoſure, and is of quick growth; and to form a Hedge, may be planted in one row, at about eighteen inches to three feet diſtance, according to the ſize of the plants at the time of planting.

The lauruſtinus, being valuable not only as an ever green, but as one of our moſt beautiful flowering ſhrubs, will form a delightful Hedge for ornament, as it will be covered with flowers in winter and ſpring; it is alſo excellently adapted for training hedge-faſhion againſt any ſhabby fence or naked wall. Planting it in either method, in one row, at from about eighteen inches to three feet diſtance.

The phillyrea and alaternus are very beautiful ever-greens for ornamental Hedges, both of which plants greatly reſemble each other; but the phillyrea being the ſtrongeſt grower, as well as thickeſt ſhooter, is the moſt eligible for a hedge, but for variety both may be uſed: they are alſo ſome of the beſt ever-green ſhrubs for training hedge faſhion, againſt any unſightly or naked wall or paling fence, which they will ſoon cover; and if the common green and variegated kinds are intermixed, in either mode of hedge-work, they will have a delightful effect, and may be trained as detached Hedges, ſix or eight feet high, and againſt any fence ten or twelve.

Plant them in one row, at from about fifteen or eighteen inches to two or three feet diſtance between plant and plant.

The bay will alſo form a tolerable ever-green Hedge for variety, and may be led up ſix or ſeven feet high; placing the plants half a yard diſtance.

The ever-green oak is a proper plant to form a tall hedge, as it may be trained fifteen or twenty feet high, if required; plant it in one row, ſetting the plants one, two, or three feet aſunder, according to their ſize.

The ever-green privet will alſo form a tolerable good Hedge five or ſix feet high, planting the ſets about a foot aſunder, and train it up narrow at top.

The tree-box makes a very cloſe and beautiful low ever-green hedge, about four or five feet high, planting them a foot aſunder.

The other leſſer ſorts of ever-greens mentioned in the liſt for ever-green Hedges, are ſometimes employed for variety to form moderate Hedges, at from about three or four to five or ſix feet high; planting them in a row at about from twelve or eighteen inches to two feet aſunder.

All the ſorts of ever-greens here ſpecified for Hedges, are raiſed for ſale at all the nurſeries; and when from about twelve or eighteen inches to two or three feet high, are of proper ſize for that purpoſe.

The ſeaſon for planting them is in autumn or in ſpring; for it is not ſafe to tranſplant ever-greens in the middle of winter.

With reſpect to the mode of planting all the above ſorts of ever-greens, for middle or internal Hedges; no ditch nor bank is neceſſary, as for outward Hedges for fences; ſo that in the place where the Hedge is deſigned, mark out a ſort of border the whole length, two or three feet wide, and dig or trench it all the way along, for the reception of the plants: the plants need only be planted in a ſingle row; obſerving, that if the plants are ſmall, and that you would have them meet and form a hedge as ſoon as poſ-

ſible, you may plant them at from about a foot to fifteen or eighteen inches aſunder; but if the plants are two or three feet high, and proportionably ſpreading, from about eighteen inches to two or three feet, may be a proper diſtance; and as to the method of planting, if they are ſmall plants, they may be planted in trenches as directed in planting Hedges for fences; but if large plants with ſpreading roots, they may either be trenched in as you proceed in digging the ground, or holed in, plant and plant; the opening of one hole fills up that immediately before it, about the roots of the plant placed therein; and ſo proceed hole and hole to the end, placing all the plants upright, at regular diſtances, tread the earth cloſe about their roots, and make their heads range evenly.

*Deciduous Kinds.*

The proper deciduous trees and ſhrubs for internal Hedges in gardens, beſides the ſorts already treated of for outward Hedges are: Hornbeam—Beech—Elm—Lime-tree—and Alder: all of which are proper either for middling or tall hedges, as they may be trained up from about ſix or eight to fifteen or twenty feet high; and the elm to double that height, if required. Privet is alſo ſometimes uſed for moderate Hedges. And for low Hedges the Roſe—Sweet-briar—Honeyſuck—Syringa—Berberry, and ſeveral other low-growing deciduous ſhrubs, for variety.

The hornbeam forms one of the moſt beautiful ſummer Hedges of the deciduous tribe, it being a moderate, but very cloſe ſhooter, well furniſhed with leaves; and may be trained up from about ſix or eight, to twelve or fifteen feet high; but the leaves, although they wither in autumn, remaining firmly attached to the branches all winter, they make but a ſhabby appearance during that ſeaſon: it is, however, a fine Hedge, and the ſingularity of its retaining its withered leaves in winter, renders it ſuperior to moſt other deciduous Hedges for the purpoſe of forming ſhelter in the winter time, ſee CARPINUS. Plant it for a Hedge in a ſingle row, at about half a yard aſunder, if required to form a cloſe moderate Hedge as ſoon as poſſible; but if you deſign to lead up the Hedge pretty tall, ſet the plants about three or four feet diſtance.

The beech alſo forms a very cloſe regular Hedge, from about ſix or eight, to fifteen or twenty feet high: the leaves withering on the branches in autumn, continue dropping off moſt part of the winter. Plant it as directed above for the HORNBEAM.

The elm will form a very cloſe, even, and beautiful Hedge, provided the upright Engliſh elm is planted, it being the propereſt of all elms for this purpoſe; and may be trained from ſix or eight, to thirty or forty feet high, forming a cloſe Hedge from the very bottom to top. It is planted in a ſingle row, from about a yard to ſix or eight feet diſtance; but when required to form a cloſe middling Hedge as ſoon as poſſible, you may ſet the plants but two feet or a yard aſunder; and if intended for a moderately tall Hedge, plant them three or four feet apart in the row; and if deſigned to have a Hedge of conſiderable height, place the plants five or ſix feet diſtance at leaſt, but if eight or ten the better; as, if the plants of a very tall Hedge ſtand too cloſe, they are apt to get naked at bottom.

The lime-tree is ſometimes employed for ornamental Hedges for variety, but is greatly inferior to any of the other deciduous kinds, as it becomes thin and ſhabby by clipping, and is thinly leaved; which alſo begin to fall off very early in autumn.

The alder, as it delights in moiſt ſoils, and watery places, is ſometimes planted for Hedges in low moiſt parts of gardens, where other trees will not proſper, and makes a handſome Hedge, from about ſix or eight, to twelve or fifteen feet high, retaining its leaves late in autumn, and continuing a fine green to the very laſt. See BETULA ALNUS.

Privet is frequently planted for Hedges, as it grows exceedingly cloſe, may be trained up five or ſix feet high, and will grow any where; either in an open expoſure, or in the ſhade, or under trees, and even in the midſt of great cities, and ſoon grows up.

As to the other low kinds of ſhrubs mentioned in the liſt of deciduous garden Hedges, they are ſometimes employed for variety, and ſome ſorts, ſuch as roſes, honeyſuckles, and ſyringa, formed into low Hedges, will, beſides their property as Hedges, produce vaſt quantities of flowers.

With reſpect to the method of forming all theſe kinds of deciduous Hedges, the plants for that purpoſe are all raiſed as directed under each reſpective genus, or may be had from the nurſeries; and when from about one foot to a yard or more high, according to the ſorts, are of a proper ſize for that purpoſe; for it is eligible to plant them young, chuſing

chuſing ſuch that are well furniſhed all the way with plenty of ſide or lateral ſhoots, that they may form a cloſe Hedge quite from the bottom; and all of which may be planted any time from October till March, in open weather.

As to the method of planting, nearly the ſame is to be obſerved as directed for the ever-green kinds.

*Of Training the above different Sorts of Hedges.*

As to the method of training the Hedges, both ever-green and deciduous kinds, they, while young, muſt be but ſparingly topped, till they arrive at their intended height: cutting each ſide, however, moderately every ſummer with garden ſhears, to train them in the proper form, and cauſe them to throw out plenty of lateral wood to thicken; but as to the top, only juſt trim the ends of the running ſhoots a little even, and to promote their emitting latterals to thicken gradually as they advance in height; and as ſome plants will advance conſiderably faſter in height than others, let thoſe be trimmed within the bounds of regularity, which is all that ſhould be done till the Hedge has attained nearly its deſigned height: obſerving in training up the different Hedges to keep the top gradually a little narrower than the bottom; but more particularly thoſe of the moſt pliant growth, eſpecially ſome of the ever-green kinds, otherwiſe when broad at top, they catch much ſnow in winter, the weight of which would break the more pliant ſorts much out of form.

All full trained Hedges, in order to preſerve them in proper form, cloſe and neat, muſt be clipped, both on the ſides and top, once or twice a year, but never leſs than once; and the beſt time of the year for this work is ſummer, from about the middle or latter end of June to the end of Auguſt; for then the Hedges will have made their ſummer ſhoots, which ſhould always, if poſſible, be clipped the ſame ſeaſon while in leaf, and before the ſhoots become hard, whereby you will be able to perform the work more expeditiouſly, and with greater exactneſs; for regular Hedges ſhould be cut as even as a wall on the ſides, and the top as ſtraight as a line: obſerving after the hedge is formed to its proper height and width, always cut each year's clipping nearly to the old cut of the former year, particularly on the ſides, for by no means ſuffer them to grow above a foot or two wide, nor ſuffer them to advance upon you too much at top, where it is deſigned, or neceſſary to keep them to a moderate height.

But to keep Hedges in perfect good order, they ſhould be clipped twice every ſummer: the firſt clipping to be about Midſummer, or ſoon after, when they will have made their ſummer ſhoot; and as they will ſhoot again, what may be called the autumn ſhoot, the ſecond clipping is neceſſary towards the middle or latter end of Auguſt, and they will not ſhoot again that year.

However, when it does not ſuit to clip them but once in the ſummer, the clipping ſhould not be performed until the beginning of Auguſt; for if cut ſooner, they will ſhoot again, and appear almoſt as rough the remainder of the ſummer and all winter as if they had not been clipped at all.

Very high Hedges are both troubleſome and expenſive to cut. The clipping is ſometimes performed by the aſſiſtance of a high machine-ſcaffolding, or ſtage, twenty or thirty feet high, or more, having platforms at different heights for the men to ſtand upon, the whole made to move along upon wheels: it is compoſed of four long poles for uprights, well framed together, eight or ten feet wide at bottom, narrowing gradually to four or five at top, having a platform or ſtage at every ſeven or eight feet height, and one at top of of all; and upon theſe the man ſtands to work, each platform having a rail waiſt-high to keep the man from falling; a ſort of a ladder formed on one ſide for the men to aſcend, &c. and at bottom four low wheels to move it along: upon this machine a man may be employed on each ſtage or platform, trimming the Hedge with ſhears, and ſometimes with a garden hedge-bill fixed on a handle five or ſix feet long, which is more expeditious, though it will not make ſo neat work as cutting with ſhears; ſo as they proceed in cutting, the machine is moved along upon its wheels. But ſometimes, inſtead of the above machine, high clipping is performed with multiplying ſpring, or ballance-ſhears: i. e. ſhears fixed nearly horizontal upon the end of a long pole, ſix, eight, or ten feet long, and which is made to fix into another occaſionally, by means of iron rings, and this into a third, &c. according as you advance in height with the clipping; ſo that the ſhears by means either of a ſpring, or by a knob of iron forged to the back of the lower blade, for a weight, are made to open of themſelves,

themſelves. Then having a long ſtring reaching from a ſmall bent iron handle of the ſhears, all the way down the ſides of the poles through ſmall rings; and by holding the pole in one hand, reſting the lower end on your knee or foot, and pulling the ſtring, the ſhears are ſtruck cloſe, ſo as to cut the ſhoots of the Hedge; and at each ſtroke the ſhears open again, ready for another: this however is very tedious, as well as tireſome to the workman, and only the ſides of the hedge can be trimmed; but theſe very high hedge-works, on account of the great trouble of clipping, and the preference given to rural growth, are become in diſrepute; and, in moſt places, the trees which formed them are ſuffered to grow in an open natural way.

HEDYSARUM, French Honeyſuckle.

The plants are principally of the herbaceous tribe; and there are many ſpecies, but not more than two common to the Engliſh gardens; a hardy biennial and perennial, both of the flowery race, producing ſtalks two or three feet high, adorned with pinnated and trifoliate leaves, and papilionaceous flowers in long ſpikes.

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX, is monophyllous and half five-parted. COROLLA is papilionaceous of four petals, an oblong oval, compreſſed, emarginated, reflexed vexillum; two oblong, narrow, erect wings, and an obtuſe carina, bifid at the baſe. STAMINA, ten diadelphous filaments, and roundiſh antheræ. PISTILLUM, a ſmall narrow germen, awl-ſhaped, reflexed ſtyle, and ſingle ſtigma. PERICARPIUM, a jointed pod, each articulation containing one reneforme ſeed.

The ſpecies commonly cultivated in our gardens are:

[1]HEDYSARUM *Coronarium.*

*Common biennial French Honeyſuckle.*] Hath large deeply-ſtriking biennial roots; upright, hollow, ſmooth, very branchy ſtalks, three or four feet high, garniſhed with pinnated leaves, of five or ſix pair of foliola, terminated by an odd one; and from the places of the leaves, long ſpikes of beautiful red flowers, ſucceeded by jointed ſeed-pods.

*Variety.*] With white flowers. Both theſe varieties are biennial, riſing one year from ſeed, flowers the next, and then periſh.

[2]HEDYSARUM *Canadenſe.*

*Canadian perennial Hedyſarum.*] Hath long deeply-penetrating perennial roots, crowned with ſimple radical leaves, ſlender ſtalks two feet high, garniſhed with trifoliate or three-lobed leaves, and long looſe ſpikes of flowers from the ſides and ends of the branches, ſucceeded by jointed triangular ſeed-pods.

*Varieties.*] Canadian hedyſarum, with red flowers—with white flowers—and with purple flowers.

Both theſe ſpecies of *Hedyſarum* and reſpective varieties flower in June and July, are exceedingly floriferous, particularly the biennial ſort, and are productive of plenty of ripe ſeed in autumn, and from which all the ſorts may be raiſed abundantly in the common ground.

The firſt ſpecies and variety are biennials, and very ornamental plants for large borders, and to intermix in the ſhrubby compartments, allowing them room, for they branch out greatly every way, producing a vaſt profuſion of flowers; obſerving, as both the varieties are biennial, a ſupply muſt be raiſed annually from ſeed.

The ſecond ſort and varieties are perennial in root, but annual in ſtalk: they are proper ornaments for large flower borders, and to interſperſe in the ſhrubbery clumps: allow them a dryiſh ſoil.

*Propagation, &c.*

All the ſorts are propagated by ſeed, ſowed in March or April, in a bed or border of common earth, for tranſplantation.

Sow each ſort ſeparate, either in drills half an inch deep, or on the ſurface, and rake them in. When the plants are come up two or three inches high, prick them out into another bed or border, ſix inches aſunder, giving water directly, and repeat it as occaſion requires, till they have taken root, and begin to grow: here let them ſtand till October, then tranſplant them into the places where they are to remain to flower, which they will effect the following ſummer.

Obſerve that as the biennial ſort totally periſh ſoon after flowering, a freſh ſupply muſt be raiſed from ſeed every ſpring; but the perennial ſort being abiding in root, ſends up new flower-ſtalks annually.

HELIANTHUS, *Sun-flower.*

This genus compriſes ſeveral hardy herbaceous flowery annuals and perennials, and an eſculent root; moſt of them riſing with upright ſtrong ſtalks, ſeveral feet high, adorned with large ſimple leaves, and terminated by large compound radiated flowers.

Claſs

Claſs and order, *Syngeneſia Polygamia Superflua.*

*Characters.*] CALIX is compoſed of many oblong imbricated leaves, broad at their baſe, and pointed at the top. COROLLA is a compound radiated flower, having numerous tubular hermaphrodite fruitful florets in the diſk, and the border or radius compoſed of long, flat, female, barren florets. STAMINA, five crooked filaments in each hermaphrodite floret, and tubulous antheræ. PISTILLUM, in the hermaphrodites, an oblong germen, ſlender ſtyle, and reflexed ſtigma. PERICARPIUM, none; an oblong four-cornered ſeed, ſucceeds each hermaphrodite floret, reſting on the general receptacle.

This genus compriſes—The Annual Sunflower—Perennial Sun-flowers—and the Jeruſalem Artichoke.

The ſpecies principally cultivated in our gardens are:

[1]HELIANTHUS *Annuus.*

*Annual Sun-flower.*] Hath large fibrous roots; an upright ſtrong ſtalk, riſing from about half a yard, to ten or twelve feet high, branchy near the top, garniſhed with large oblong heart-formed trinervous leaves; and the main ſtem and every branch terminated by one large radiated yellow flower, nodding a little downward.

*Varieties.*] Giant Sun-flower, growing from about five or ſix to ten or twelve feet high—Dwarf Sun-flower, growing from about half a yard to a yard high; and of each variety there are ſingles, and doubles, with deep yellow flowers, and with ſulphur-coloured flowers: the doubles of each ſort are very beautiful, and are rendered double by the radius, ſee COMPOSITUS *flos.* They all flower in July, Auguſt, and September.

[2]HELIANTHUS *Multiflorus.*

*Multiflorus* or *Many-flowered perennial Sunflower.*] Helianthus with fibrous perennial roots, many upright ſtalks, branching numerouſly three or four feet high, garniſhed with heart-ſhaped leaves below, and oval above; and all the ſtalks, branches, and ſide ſhoots, terminated by largiſh bright yellow flowers.

*Varieties.*] Single-flowered perennial Sunflower—Double perennial Sun-flower, rendered double by the radius.

This ſpecies is the common perennial Sunflower, ſometimes called Everlaſting Sunflower; a very floriferous plant, continuing a conſtant ſucceſſion of bloom from July until November; the double-flowered variety is the moſt valuable; the flowers being perfectly full and doubled to the very centre.

[3]HELIANTHUS *Decapelus.*

*Ten-petalous Perennial Sun flower.*] Produces many ſtalks three or four feet high, ſpear-ſhaped leaves, and yellow flowers, having but ten petals in the radius.

[4]HELIANTHUS *Giganteus.*

*Giant Perennial Sun-flower.*] Produces many erect ſtalks, eight or ten feet high, ſpear-ſhaped, alternate leaves, rough and ciliated at the baſe, and many ſingle yellow flowers; having about twenty petals in the radius.

[5]HELIANTHUS *Atro-Rubens.*

*Dark Red diſked Perennial Sun-flower.*] Produces ſeveral ſtalks three or four feet high, garniſhed with oval, crenated, trinervous leaves, and flowers having dark red middles, and the calycinal ſcales erect.

[6]HELIANTHUS *Tuberoſus.*

*Tuberous-rooted Perennial Sun-flower, commonly called Jeruſalem Artichoke.*] Hath a large tuberous, knobbed, irregular, eatable root, like a potatoe; upright ſtalks, ſix or eight feet high; large oval-cordate triple-nerved leaves, and the ſtalks terminated by ſmalliſh yellowiſh flowers.

The flowers of all theſe ſpecies are of the compound radiated kind; many tubular florets compoſe the diſk, and long flat ones the radius or circumference, and which, in the annual ſort in particular, is ſucceeded by abundance of fine large ſeed in autumn, occupying the whole diſk, or middle of the flower; for the female florets in the radius being imperfect, are never followed by ſeeds. See the *Characters.* The name Sun-flower, is chiefly derived from the annual ſort, which is ſaid to be given, becauſe the flower obeys the motion of the ſun, turning with its face always thereto, but more probably from the reſemblance of its rays, to the figure of the radiant beams of that planet.

All the ſorts, except the laſt, have fibrous roots, and by which the perennial ſorts multiply greatly; but the ſixth ſort hath a knobby fleſhy root, which alſo multiplies exceedingly, ſo as often to become troubleſome like a weed: the annual ſorts are but of few months duration; but the perennials are of great duration in root, but annual in ſtalk.

They are all originally of America; but have been long in our gardens, eſpecially the firſt, ſecond, and ſixth ſpecies, and are all ſo hardy as to grow here in any ſoil and expoſure.

They

They are proper ornamental furniture for the common compartments of the pleaſure-ground, arranging them rather backward, among the taller claſſes, where they will effect a good variety with their bloom, in one or other of them, from July until November.

The annual ſorts are ſtately majeſtic plants, of amazing quick growth, as ſome of the giant ſorts will ſometimes in a ſtrong rich ſoil, arrive at ten or twelve feet height in four months, and produce flowers from ten or twelve to eighteen inches diameter, and make a noble appearance, eſpecially the full double kinds. But the dwarf kind being rather remarkable for having the moſt doubles, and theſe generally more double than the giant ſorts, they are the moſt eſteemed for general culture, and are more particularly adapted for ſmall gardens; though in large gardens ſome of each ſort is proper: and both varieties, if growing ſeparate, remain tolerably permanent, as the ſeed of each will produce plants of the ſame ſort again.

Theſe fine plants are of no more than about ſix months duration, being raiſed from ſeed in ſpring, arrive at full growth in July and Auguſt, and die wholly in October or November; ſo that a freſh ſupply muſt be raiſed every ſpring.

All the perennials are of great duration in root; but their ſtalks decay in autumn, and new ones riſe in ſpring.

Of the perennial ſorts, the *Helianthus Multiflorus* has conſiderably the greateſt merit for ornament, the flowers being larger and more numerous than any of the others, and very double, and is the ſort commonly cultivated; but the other ſorts may be admitted in a collection to encreaſe the variety. All of which may be had at moſt of the nurſeries; but the *Helianthus Tuberoſus* ſhould be but ſparingly admitted in compartments amongſt other plants, for its roots will multiply ſo greatly, as ſoon to over-run the ground.

The *Helianthus Tuberoſus* is by many eſteemed for its roots to eat, which is large, ſolid and fleſhy, ſomewhat reſembling a potatoe, and ſometimes as large, but much more knobbed and irregular, and greatly inferior to that root as an eſculent, it being rather of a watery and inſipid nature, though ſome are remarkably fond of them: they are commonly boiled and ſerved up with plenty of butter.

This ſort is commonly called Jeruſalem Artichoke, though with very little propriety, for the plant grows no where naturally about Jeruſalem, nor is it in the leaſt allied in any reſpect to *Cynara*, or Artichoke.

*Propagation, &c.*

The propagation of all the ſorts is very eaſy; the firſt ſpecies and varieties by ſeed, and all the others by roots.

The firſt ſpecies, therefore, and varieties, are raiſed from ſeed, ſowed annually in March or April, either in the borders, or other places where you deſign they ſhall flower, in patches, three or four ſeeds in each, about an inch deep, and when the plants are an inch or two high, thin out the worſt, leaving only one of the beſt plants in each patch; or ſow them thin in a bed or border, and when the plants are two or three inches high, tranſplant them, in moiſt weather, where they are finally to remain; or if you would bring them as forward into bloom as poſſible, the ſeed may be ſowed on a moderate hot-bed under a hand glaſs, giving plenty of air in mild weather, and plant them out in May.

The perennial kinds are propagated plentifully by dividing the roots, any time from October or November, till March: the four fibrous-rooted ſorts may be ſlipped into ſmall heads, and planted at once where they are to remain; they will flower the following ſummer, and will be increaſed greatly by autumn: and as to the tuberous-rooted kind, the large roots may either be divided into pieces, or plant the ſmall roots, every bit having an eye; they will readily grow, and multiply greatly in one year.

But when deſigned to raiſe the tuberous *Helianthus*, or Jeruſalem Artichoke as an eſculent, it ſhould be planted in an open ſpot of light ground in the kitchen garden. In ſpring having procured ſome large roots, they may be cut into four pieces; each making a ſet or plant; or, in default of large ones, may uſe ſmall ones whole. They are to be planted with a dibble, in rows three feet and a half aſunder, planting them four or five inches deep, and half a yard diſtance in each row; and, when planted, rake the ground even; and keep it clean from weeds by broad hoeing. The plants will come up in April or May, and ſhoot up into ſtalk ſix, or eight

feet

feet high, which in the end of July, or beginning of Auguſt, may be cut down half way, the better to admit the benefit of the air, rains, and dews to the roots to increaſe their bulk.

They will be fully grown by September, when ſome may be taken up for uſe; and about the end of that month, or in October, take them wholly out of the ground, and lay them in ſand in a dry place, for winter ſervice.

HELIOTROPIUM, *Heliotrope*, or *Turnſole*.

This genus compriſes a few herbaceous annuals, and ſome ſhrubby plants, all tender exotics; one of the latter is cultivated here as a green houſe ſhrub.

Claſs and order, *Pentrandria Monogynia*.

*Characters.*] CALIX is monophyllous, and five parted at top. COROLLA, is monopetalous, divided into five unequal parts. STAMINA, five filaments, and ſmall antheræ. PISTILLUM, four germina, ſlender ſtyle and notched ſtigma. PERICARPIUM, none, oval ſeeds lodged in the calix.

The ſpecies chiefly cultivated here is:

HELIOTROPIUM *Peruviana*.

*Peruvian Sweet-ſcented Heliotrope.*] Hath a ſhrubby ſtalk, branching numerouſly four or five feet high, ſpear-ſhaped, oval, rough, veined, hairy leaves, about three inches long, and one broad, placed ſparſedly; and from the ends of the branches, numerous cluſtered ſpikes of pale blue, ſweet-ſcented flowers, appearing great part of the year, and ſucceeded by ripe ſeeds in autumn.

This plant muſt be always kept in pots to move into the green-houſe in winter; and muſt be potted in any light rich garden-earth.

It is propagated eaſily by ſeed, and cuttings of its young ſhoots.

By Seed.—This ripens here: ſow it in pots of light earth in ſpring, and plunge them in a hot-bed; and when the plants are two or three inches high, plant them in ſeparate ſmall pots, plunging them alſo in a hot-bed to ſtrike; then inure them gradually to the full air.

By Cuttings.—Plant ſmall cuttings of the young ſhoots in ſpring or ſummer in pots, and if plunged in a moderate hot bed will ſooner take root.

HELLEBORUS, Black Hellebore, &c.

This genus retains a few hardy herbaceous perennials for ornament and medical purpoſes, obtaining in ſtature, ſome not more than three or four inches, others from one to two feet, adorned with many-lobed, and hand-ſhaped leaves, and pentapetalous flowers.

Claſs and order, *Polyandria Polygynia*.

*Characters.*] CALIX, none. COROLLA, five large roundiſh petals, and many ſmall nectaria placed circularly. STAMINA, numerous filaments, and compreſſed erect antheræ. PISTILLUM, ſeveral compreſſed germina, awl ſhaped ſtyles, and thick ſtigmas. PERICARPIUM, ſeveral bicarinated capſules, having the lower carinas ſhorteſt and the upper convex, and many round ſeeds.

This genus compriſes—The True Black Hellebore, or Chriſtmas Roſe—Winter Aconite——Wild Black Hellebore, or Bear's-foot, &c.

The ſpecies are:

[1]HELLEBORUS, *Niger*.

*True Black Hellebore, commonly called Chriſtmas Roſe.*] Helleborus with roots compoſed of many thick, fleſhy, ſpreading fibres, crowned by a large cluſter of lobed leaves, conſiſting each of ſeven or eight obtuſe, fleſhy lobes, united to one foot-ſtalk; and between the leaves ſeveral thick fleſhy flower-ſtalks three or four inches high, ſurmounted by large beautiful white flowers of five large roundiſh petals, and numerous filaments, appearing in winter, about, or ſoon after Chriſtmas.

This is the true black Hellebore of the ancients; the root is uſed in medicine, and is a ſtrong purgative.

[2]HELLEBORUS *Hyemalis*.

*Winter Aconite, formerly a ſpecies of Aconitum (Aconitum Hyemale).*] Hath a ſmall, bulbous, brown root, ſending up ſmall foot-ſtalks two inches high, each ſupporting one leaf, divided into many parts, and ſmall golden yellow flowers ſitting in the boſom of the leaves; appearing in January or February.

[3]HELLEBORUS *Foetidus*.

*Stinking Great Wild Black Helebore, or Bear's-foot.*] Hath large fibrous roots, upright ſmooth ſtalks dividing into buſhy heads, and branching two feet high, garniſhed with large pedated dark-green leaves of about nine long, narrow, ſerrated ſolioles, ending in acute points, and at the ends of all the branches numerous greeniſh flowers tipped with purple; appearing early in winter, and ſucceeded by plenty of ſeeds in the ſpring.

HELLEBORUS *Viridis.*

*Green-flowered Wild Black Hellebore, or Bear's foot.*] Hath thick fibrous roots, crowned with large digitate or fingered dark-green leaves, of nine long, narrow, ſerrated lobes; upright firm ſtalks a foot high, garniſhed with ſmaller leaves; and from the top many green flowers intermixed alſo with leaves: appearing in January and February, ſucceeded by plenty of ſeed in May.

All theſe four ſpecies are hardy herbaceous perennials, of which the third and fourth ſorts remain buſhy and green the year round, more particularly the third; and all the ſorts are ſo hardy as to ſucceed in any common ſoil of a garden: the firſt ſhould rather have a warm ſituation, but all the others will proſper any where; and the third and fourth either in an expoſed ſituation, or under the ſhade of trees; ſo are proper to mix in ſhrubberies and wilderneſs quarters.

The flowers of all the ſorts are compoſed of five roundiſh petals, and numerous filaments; thoſe of the *Helleborus Niger* are conſiderably the largeſt and moſt beautiful of all the ſorts.

All the ſpecies may be employed as plants of ornament to adorn the flower borders, and other parts of the pleaſure-ground.

They are cultivated by the nurſerymen for ſale, and their propagation and culture is very eaſy.

The firſt ſort, *Helleborus Niger*, poſſeſſes great merit, both for the ſingularity of its profuſion of bloom, in the midſt of winter, and for the great beauty of its flower; which being large, and bearing ſome reſemblance to a ſingle white roſe, and appearing often about Chriſtmas time, derived the appellation of Chriſtmas Roſe: it proſpers in the open borders, or may be planted in pots, to move when in bloom to adorn any particular place; obſerving it always flowers faireſt and the moſt abundantly in the front of a warm ſunny border. The plants may be tranſplanted, and the roots divided for propagation in autumn, i. e. September, October, or November; but the ſooner in autumn it is done, the ſtronger they will flower at their proper ſeaſon towards ſpring; or they may be removed in ſpring, after they have done flowering.

Its propagation is effected commonly by parting the roots; alſo by ſeed, when they ripen, which happens but ſeldom in this country.

But as being a fibrous-rooted perennial encreaſing in root, by off-ſets, or ſlips, its propagation is eaſily effected by dividing the root into ſlips in autumn, or in ſpring, after the flower is paſt, not too ſmall, planting them in a ſheltered border, and they will flower at their proper ſeaſon.

The ſecond ſort, *Helleborus Kyemalis*, or Winter Aconite, is eſteemed for its early bloom, which though a diminutive plant, almoſt the ſmalleſt of the bulbous-rooted tribe, yet it exhibits its golden flowers very ornamentally early in ſpring, when few others are to be ſeen; and is a very proper plant to adorn the edges of borders, and other flower compartments, in aſſemblage with ſnowdrops, &c. placing them in patches alternately, ſeveral roots in each patch; otherwiſe, as the plants being ſmall and near the ground, if not planted in cluſters, they will not make any conſiderable ſhew: plant, therefore, five or ſix roots at leaſt in each patch of four or five inches diameter, putting them two or three inches deep; where they may remain undiſturbed three years, or till encreaſed into large bunches, then taken up and ſeparated.

The roots being bulbous, they are tranſplanted when their leaves decay, from June till October, and they encreaſe faſt by off-ſets like other bulbs; which may be taken up and ſeparated every two, three, or four years, for propagation.

The third and fourth ſpecies being large, buſhy, ever-green, very hardy perennials, particularly the *Helleborus Foetidus*, flowering in the midſt of winter, and early in ſpring in any weather, effect a good variety at all ſeaſons; but although the flowers are not elegant, yet the plants appearing always green, of a robuſt aſpect, and flowering at a time of year when hardly any others appear in the open air, renders them proper ornaments for large borders, particularly in ſhrubbery and wilderneſs plantations, as they will proſper between ſhrubs, and under the ſhade of trees, &c. they being natives of woods in ſeveral parts of England, and may be raiſed in great plenty from ſeed; and from ſcattered or ſelf-ſown ſeeds many young plants will riſe.

They are alſo both medical plants, and for which uſe great quantities are raiſed in many gardens about London to ſupply the markets.

Both theſe ſorts are propagated by ſeed ſown as ſoon as ripe, or any time from March till

till September, though ſpring is the beſt ſeaſon. The ſeeds may be had of all the nurſery and ſeedſmen. Sow it in beds of common earth, and rake it in; and when the plants are three inches high, plant them out in beds a foot apart; and after having two or three months growth there, tranſplant thoſe intended for ornament where they are to remain; but thoſe raiſed for medical uſe, may remain in the beds.

Theſe plants may be removed either in ſpring or autumn, or even in winter, as they will readily riſe with balls about their roots.

HEMEROCALLIS, Day Lily, or Lily-Aſphodel.

Two herbaceous flowery perennials for the pleaſure-ground; producing very long, narrow, radical leaves, and naked annual ſtalks two feet high, adorned at top with large, liliaceous, ſix-parted, yellow and red flowers.

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX, none. COROLLA, is an infundibuliforme campanulated petal, with a ſhort tube, and the limb deeply cut into ſix parts, which are ſpreading and reflexed. STAMINA, ſix awl-ſhaped declinated filaments, and long incumbent antheræ. PISTILLUM, a roundiſh ſulcated germen, filiforme ſtyle, and three-cornered ſtigma. PERICARPIUM, an oval, trigonal, trilobous, trilocular capſule, and numerous roundiſh ſeeds.

The *Liliaſtrum*, or St. Bruno's Lily, formerly of this genus, is removed to the genus *Anthericum*, its character determining it a ſpecies of that genus, ſee ANTHERICUM *Liliaſtrum.*

The ſpecies, therefore, now of this genus are:

1 HEMEROCALLIS *Flava.*

*Yellow Day Lily.*] Hemerocallis, with ſtrong fibrous roots, furniſhed with oblong yellowiſh tubers; ſending up keel-ſhaped hollow leaves two feet long; upright leafleſs firm ſtalks two feet high, dividing at top into ſeveral foot-ſtalks, each terminated by one large liliaceous yellow flower, of an agreeable odour.

*Variety.*] Small yellow Day Lily. (*Hemerocallis minor.*)

2 HEMEROCALLIS *Fulva.*

*Reddiſh, or Copper-coloured Day Lily.*] Hath roots compoſed of ſtrong fleſhy fibres, and large oblong tubers; radical, keel-ſhaped, hollowed, pointed leaves, a yard long, reflexed at top; and upright thick leafleſs ſtalks, three or four feet high, dividing at top into branches, terminated by large copper-coloured liliaceous flowers, having large long ſtamina, charged with fulvous coloured farina, which being touched or ſmelled to, is diſcharged in great plenty over the hands or face.

Both theſe ſpecies are very hardy, ſucceed any where, and multiply at a great rate by their ſpreading roots; which are perennial, but annual in leaf and ſtalk: they derive the name, Day Lily, from the diurnal duration of their flowers, and by being ſucceeded by new ones daily on the ſame plants for a fortnight or three weeks.

The flowers are of the Lily form, each of one petal, deeply cut into ſix parts. See the *Characters.*

They both flower in June, and ripen ſeeds in Auguſt.

Both the ſorts are proper furniture for large borders, and other compartments of the pleaſure-garden, and may be planted in autumn, or any time in open weather, from September till March.

Their propagation is effected abundantly by parting the roots, for they increaſe greatly by off-ſets, which may be divided in autumn, or almoſt any time after flowering, or before they begin to ſhoot in ſpring; and each ſlip will flower at the proper ſeaſon.

They may alſo be raiſed from ſeed, ſown ſoon after they are ripe, in a bed of common earth, and raked in: the plants will come up in ſpring following; prick them out in nurſery beds in ſummer, and ſome of the ſtrongeſt will flower the ſecond year.

HEPATICA, Noble Liverwort, now a ſpecies of *Anemone.* See ANEMONE *Hepatica.*

HERBA, an Herb All vegetables which riſe with leaves and ſtalks annually from the root, without becoming woody and durable, are properly conſidered as Herbs; ſuch, for inſtance, are many of the kitchen-garden eſculents, and medical plants; and a vaſt train of the ornamental or flowery tribe may alſo come under that denomination. See HERBACEOUS PLANTS.

But many of the underſhrubby eſculent and medical plants are alſo ſometimes conſidered as Herbs; ſuch as ſage, thyme, rue, hyſſop, winter-ſavory, lavender, &c. but theſe having ligneous, durable ſtalks and branches, are more allied to the ſhrubby tribe, ſo are properly of the under-ſhrubby kind. See SUFFRUTICOSUS.

HERBACEA *Planta.* Herbaceous plants, or vegetables of an herb-like nature.

All vegetables that produce leaves and ſtalks annually from the root, and whoſe ſtalk or ſtems remain green and ſucculent, or ſoft, not becoming woody, nor durable, but die down to the root every year, ſoon after they have produced flowers, &c. are properly Herbaceous Plants; and of which there are annuals, biennials, and perennials. Annuals are ſuch which periſh, ſtem, root and all, at the end of the year; biennials ſubſiſt two years, generally periſhing as ſoon as they have flowered; perennials are perpetuated by their roots producing new ſtems every year for the purpoſe of producing flowers and ſeed.

So that Herbaceous vegetables are very diſtinguiſhable from the woody kinds, ſuch as trees, ſhrubs, and under-ſhrubs, whoſe ſtems and branches are woody or ligneous, and durable; and the ſtalks of the Herbaceous tribe periſh annually, or at leaſt as ſoon as they have flowered, and perfected their ſeeds, and the ſame individul ſtalk never lives to flower again, but dies in autumn; and in annuals, and biennials, root and all; but perennials ſurviving by the root, ſend up freſh ſtalks in ſpring.

Of the Herbaceous tribe are moſt of the eſculents of the kitchen-garden, except thoſe of the under-ſhrubby kinds, ſuch as ſage, thyme, hyſſop, &c. vaſt numbers of the medical plants are alſo Herbaceous; and of the flowery kinds for the pleaſure-garden, almoſt all the annuals and biennials are herbaceous; as alſo all the perennials, both the fibrous, bulbous, and tuberous-rooted kinds, whoſe ſtalks decay annually, are likewiſe Herbaceous Plants. Therefore Herbaceous Plants compoſe a very conſiderable part of the vegetable creation.

HERMANNIA, *Hermannia.*

This genus conſiſts of ſhrubby exotics for the green-houſe, growing from about half a yard to ſix or ſeven feet high, adorned principally with ſmalliſh ſimple foliage, and quinquepetalous flowers, in numerous ſpikes.

Claſs and order, *Monadelphia Pentandria.*

*Characters.*] CALIX, is monophyllous, five-parted at the brim, inflexed and permanent. COROLLA, five petals ſpirally twiſted contrary to the apparent motion of the ſun, broad and ſpreading above. STAMINA, five monadelphous filaments, and acuminated conniveut antheræ. PISTILLUM, a roundiſh pentangular germen, awl ſhaped ſtyle, and ſimple ſtigma. PERICARPIUM, a roundiſh five-cornered quinquelocular capſule, and many ſmall ſeeds.

The ſpecies that are principally cultivated are:

[1]HERMANIA *Lavendulifolia.*

*Lavender-leaved Hermannia* ] Hath a ſhrubby ſtalk and ſlender branches, very buſhy, about a foot and a half high; ſmall, ſpear ſhaped, obtuſe, hairy leaves, and cluſters of ſmall yellow flowers along the ſides of the branches, from June till autumn.

[2]HERMANNIA *Althæifolia.*

*Althæa-leaved Hermannia.*] Hath a ſhrubby ſtalk, and ſoft woolly branches, growing two feet high, ovaliſh, plaited, crenated, woolly leaves, and numerous yellow flowers, in looſe ſpikes at the ends of the branches, in June and July.

[3]HERMANNIA *Groſſularifolia.*

*Gooſeberry-leaved Hermannia* ] Hath a ſhrubby ſtalk and ſpreading branches, growing three or four feet high; ſpear ſhaped, pinnatifid, ſmall, cloſe-ſitting leaves, and bright yellow flowers, by twos on each foot-ſtalk, numerouſly at the ends of all the ſhoots and branches, in April or May.

[4]HERMANNIA *Alnifolia.*

*Alder-leaved Hermannia.*] Hath a ſhrubby ſtalk and branches, growing irregularly four or five feet high; wedge-ſhaped, plaited, crenated leaves; and pale yellow flowers in ſhort ſpikes from the ſides and ends of the branches, in April and May.

[5]HERMANNIA *Hyſſopifolia.*

*Hyſſop-leaved Hermannia* ] Hath a ſhrubby upright ſtalk branching, out laterally, ſix or ſeven feet high; ſmalliſh, ſpear-ſhaped, obtuſe, ſerrated leaves; and pale yellow flowers in cluſters from the ſides of the branches, in May and June.

All theſe five ſpecies are African ſhrubs, but ſucceed here with the protection of a green-houſe in winter, ſo muſt be potted in pots of rich garden mould, and managed as other green-houſe ſhrubs. See GREEN-HOUSE PLANTS.

They are ever green, and moſtly of buſhy growth, and produce a vaſt profuſion of flowers in April, May, and June.

The propagation of all the ſorts is by cuttings of their young ſhoots, any time from April till July, planted in pots of rich earth, which if plunged in a moderate hot bed, they will ſoon ſtrike; and thoſe planted in ſummer will alſo ſtrike without the aid of hot-beds, even in

in beds of common earth, watered and ſhaded occaſionally; and when rooted and begin to ſhoot, tranſplant them each into a ſmall pot.

They may alſo be raiſed from ſeeds; but this is ſeldom produced good here; it is procured from abroad, and muſt be ſowed in pots, and placed in a hot-bed.

HERMAPHRODITUS *Flos.* Hermaphrodite Flower. A flower furniſhed with both the male and female organs of generation, i e. the filaments and antheræ, the male organs; and the germen, ſtyle, and ſtigma, as the female; all of which being contained within the ſame calix and corolla, as in moſt, they are denominated Hermaphrodite Flowers.

Of this kind of flower, are thoſe of all the claſſes, except *Monoecia* and *Dioecia*; in the former of which, male and female flowers, having each its diſtinct parts, are produced ſeparate on the ſame plant; in the latter on diſtinct plants; and in the claſs *Polygamia*, there are always Hermaphrodites mixed with the males, or females, or both, either on the ſame, or ſeparate plants; and in the claſs *Syngeneſia*, which comprehends the numerous tribe of compound-flowers, and in which ſometimes the flower is compoſed entirely of Hermaphrodite florets, and ſometimes Hermaphrodite and females, and frequently Hermaphrodites and florets of no ſex or neuter. See CLASSIS.

So that the greateſt part of the vegetable creation produces Hermaphrodite flowers, either wholly, or mixed with males, or females, or both; whereby Hermaphrodites are as frequent in the vegetable, as they are rare and unuſual in the animal kingdom.

Therefore remarking, that all flowers, whether ſimple, or compoſed of many florets, having both male and female organs within the ſame corolla, either ſimple, as above ſaid, or in the corollula, or florets of a compound flower, are by botaniſts denominated Hermaphrodites, to diſtinguiſh them from males and females, which have each their parts diſtinct in their reſpective corolla.

And all plants producing Hermaphrodite Flowers only, are termed Hermaphrodite plants.

HERNANDIA, Jack-in-a-box Tree:

It compriſes two ever-green exotic trees of the Indies, ſometimes retained here in ſtoves for variety, adorned with very large beautiful ſimple foliage.

Claſs and order, *Monoecia Triandria.*

*Characters.*] CALIX, male and female flowers, having a partial involucrum of four oval leaves, and each of the females a bell-ſhaped cup. COROLLA, is of ſix petals in the males, and eight in the females. STAMINA, three filaments, and large oblong erect antheræ. PISTILLUM, a roundiſh germen, ſlender ſtyle, and large half-funnel-ſhaped ſtigma. PERICARPIUM, the calix becomes a large roundiſh, ſwollen, hollow fruit, incloſing a hard drupaceous juiceleſs nut.

The ſpecies are:

[1]HERNANDIA *Sonora.*

*Sonorous Hernandia, commonly called Jack-in-a-box.*] Grows twenty or thirty feet high, garniſhed with large broad peltated leaves, and monoecious flowers, ſucceeded by a large ſwollen, hollow fruit, formed of the calix, having a hole, or open at the end, and a hard nut within; and the wind blowing into the cavity of the fruit, makes a very ſonorous whiſtling and rattling noiſe: hence the tree derived the name, Jack-in-a-box.

[2]HERNANDIA *Ovigera.*

*Oriental oval-leaved Hernandia.*] Grows many feet high, garniſhed with large oval leaves, not peltated; and monoecious flowers, ſucceeded by ſwollen fruit, open at the end, and a nut within.

Both theſe exotics are of the tree kind, natives of the Eaſt and Weſt Indies, where they attain a large growth; but here, being kept in ſtoves, they rarely grow higher than common ſhrubs, and very few, if any, of them have flowered or fruited.

They requiring a hot-houſe here, muſt be potted in pots of rich light earth, and always retained in that conſervatory.

Their propagation is by ſeed, i. e. their nuts procured from the Weſt Indies; ſowing them in pots of rich earth, and plunge them in the bark hot-bed; and when the plants come up, prick them out into ſeparate pots, plunging them alſo in the bark-bed.

HESPERIS, Rocket, Dame's Violet, or Queen's Gilliflower.

The plants are hardy herbaceous biennials and perennials, cultivated as flowery plants, producing annual ſtalks, two feet high, ſimple leaves, and tetrapetalous cruciforme flowers, in large ſpikes at top, ſome of which are of great fragrance.

Claſs and order, *Tetradynamia Siliquoſa.*

*Characters.*] CALIX, is four leaved and deciduous. COROLLA, four oblong cruci-

forme.

forme petals. STAMINA, four long and two ſhort filaments, and narrow erect antheræ. PISTILLUM, a four-cornered germen, no ſtyle, but an oblong ſtigma ſitting on the germen. PERICARPIUM, a long compreſſed plane, bilocular pod, and many oval ſeeds.

The moſt material ſpecies are;

[1]HESPERIS *Matronalis.*

*Dame's Violet, or Common Sweet-ſcented Garden Rocket.*] Hath fibrous roots, crowned by a tuft of long ſpear-ſhaped rough leaves; upright, ſingle, hairy ſtalks, two feet high; garniſhed with oval, lanceolate, ſlightly indented, cloſe-ſitting leaves; and the ſtalk and branches terminated by large, long ſpikes of ſweet-ſcented flowers, of different colours and properties in the varieties.

*Varieties of this are;*] Garden Rocket, with ſingle white flowers—double white flowers—ſingle and double purple flowers—purple and white flowers—crimſon flowers. All of which are ſo remarkable for imparting a moſt fragrant odour, that the ladies were fond of having them in their apartments. Hence derived the name Dame's Violet, and bearing ſome reſemblance to a ſtock-gilliflower, were ſometimes alſo called Queen's-gilliflower; but are now moſt commonly called Rocket.

[2]HESPERIS *Inodora.*

*Scentleſs Rocket.*] Hath fibrous roots, upright round firm ſtalks, two feet high, garniſhed with ſpear-ſhaped, acute-pointed, ſharply indented, cloſe fitting leaves, and all the branches terminated by large ſpikes of ſcentleſs flowers, with obtuſe petals; of different colours and properties in the varieties.

*Varieties.*] Scentleſs Rocket, with ſingle white flowers—double white flowers—ſingle and double purple flowers. All of which are devoid of ſcent, but are ſhowy garden flowers.

[3]HESPERIS *Triſtis.*

*Dull-flowered Night-ſmelling Rocket.*] Hath fibrous roots; upright, branching ſpreading, briſtly ſtalks, two feet high; ſpear-ſhaped, pointed leaves; and ſpikes of pale purple flowers, of great fragrance in the evening.

They are all fibrous-rooted plants, the roots crowned with a large tuft of long leaves, and produce their flower-ſtalks annually in ſpring, flower in ſummer, ripen ſeeds in autumn, and die to the root ſoon after.

All the three ſpecies may be deemed both biennial and perennial; for, conſidered as biennials, they being raiſed one year from ſeed, flower the next, and then frequently periſh root and all, eſpecially the ſingles; but, with ſome care, both they and the doubles may be continued ſome years: and conſidered as perennials; for by cutting down ſome of their flower-ſtalks as ſoon as the flowers begin to fade, or rather before they attain a flowering ſtate, it often promotes their forming off-ſets at bottom the ſame ſeaſon for encreaſe, which being ſeparated early in autumn, each forms a plant for next year's bloom; and is worth practice for all the double kinds; by which means the plants may ſometimes be continued from year to year, otherwiſe they are rather naturally of the biennial kind; and it is, therefore, alſo proper to raiſe ſome annually from ſeeds, as directed in their propagation.

They are all hardy, more eſpecially the firſt and ſecond ſpecies, which proſper in any of the open borders, and in any common ſoil of a garden; but the third ſort being rather impatient of ſevere froſt, and much moiſture in winter, ſhould have a dry warm ſituation; and place a few in pots to move to the ſhelter of a frame in inclement weather.

The flowers of all the ſorts are formed ſeparately of four cruciforme petals, which being numerous, and collected into large ſpikes, make a fine appearance, but more particularly the double varieties, which being as large and full of petals as double ſtock-gilliflowers, are exceedingly beautiful garden flowers.

They all flower in June and July, and ripen abundance of ſeed in Auguſt.

Their ſtalks always decay in autumn, ſoon after the ſeed are ripe.

All the ſorts are very ornamental furniture for any of the open borders of the pleaſure-ground, and to interſperſe in aſſemblages with herbaceous plants, towards the fronts of the moſt conſpicuous ſhrubbery clumps, contiguous to lawns and grand walks.

They may be planted out in autumn, or early in ſpring, before they advance much for flowering; and with care they may be removed with balls to their roots, ſo as ſcarce to feel their removal

### *Propagation.*

Their propagation is performed three different ways: by ſeeds, by off-ſets of the roots, and by cutttings of the flower ſtalk.

By

By Seed.—This is ſold very cheap at all the nurſeries, and March and April is the ſeaſon for ſowing it; which ſow in a bed or border of light earth, and either rake it in lightly, or cover it a quarter of an inch deep with light mould; and when the plants are come up three or four inches high, plant them out in beds ſix inches apart, to remain till October or ſpring following; then tranſplant them where you deſign they ſhall flower, which they will all effect the enſuing ſummer.

Obſerve, moſt of theſe ſeedlings will come ſingle, that is, produce ſingle flowers, and many of theſe go off after they have flowered; but as they may be eaſily raiſed in any quantity from ſeed as above, it is proper to raiſe a freſh ſupply annually to diſperſe in the common borders.

But as to the doubles, they are propagated with certainty only by dividing the roots, or by cuttings, as directed below.

By Dividing the Roots.—This, and the cuttings of the flower-ſtalks, are the only methods to propagate the double kinds, for doubles of them are but very ſparingly obtained from ſeed; and as they are rather ſparing in forming off-ſets from the root for propagation, as before obſerved, unleſs aſſiſted by art, and being likewiſe often apt to decay entirely, root and all, after they have flowered, as being ſomewhat of a biennial nature, without practiſing a particular experiment to promote young off-ſets from the root; therefore let ſome good plants be ſet apart in any open bed or border for propagation, not ſuffering them to run up fully to flower; but when their flower-ſtalks have advanced about eight or ten inches high, cut them down cloſe to the ground, and according as they ſhoot again, cut them alſo off; and by thus ſtopping their upright growth, the roots will more readily throw out young off-ſets from their ſides all around, which will be well formed by Auguſt, or early in September, when the whole root ſhould be taken up, and the off-ſets divided ſeparately, and planted in a nurſery-bed, ſix inches diſtance, to remain till October, or ſpring following, then removed with balls to where they are to ſtand to flower; the flower-ſtalks which are occaſionally cut down to promote encreaſe of off-ſets at bottom, may be divided into lengths, and planted as hereunder directed; each cutting will root and form a plant for next year's bloom.

The above practice ſhould be purſued annually to keep up your ſtock of doubles, for thoſe which ſhoot up to full growth and bloom, rarely put out any off-ſets, unleſs the ſtalks are cut down as ſoon as the flowers begin to fade, when ſometimes they emit a few, but which will not be ſo many, nor ſo ſtrong as by the other method.

By Cuttings of the Flower ſtalks.—Having directed above to cut down the flower-ſtalks, when about half grown; each of theſe may be divided into two, ſo as to make two cuttings, though the lower half as being more hardened, will form the beſt cutting of the two; they may, however, both be planted to take their chance. Having procured a quantity of theſe kind of cuttings, from about three to five inches long, plant them in a ſhady border, putting them two parts out of three into the ground, about three inches aſunder, and give water; let the watering be frequently repeated, and many of the cuttings will be well rooted, and form ſhoots at top in ſix or eight weeks: but to promote their rooting more effectually, they may be covered cloſe with hand or bell-glaſſes, as ſoon as planted, whereby they will ſtrike much ſooner; obſerving when they begin to ſhoot at top, to raiſe the glaſſes to admit air, to which harden them fully by degrees.

Sometimes cuttings of the flower-ſtalks of thoſe which have flowered, cut down as ſoon as the flower begins to fade, and divided into lengths, and planted as above, will alſo grow, though they will not produce ſo good plants as thoſe formed of the young ſtalks early in the ſummer.

HIBISCUS, Syrian Mallow, or *Althæa Frutex*, &c.

This genus furniſhes a hardy, deciduous, flowering ſhrub, and flowery annual for the pleaſure ground, and ſome ſhrubby and herbaceous exotics for the hot-houſe, adorned moſtly with largiſh ſimple, lobated foliage, and large quinquepetalous mallow-ſhaped flowers.

Claſs and order, *Monadelphia Polyandria*.

*Characters.*] CALIX, is double, the outer ſeries is of many narrow permanent leaves, and the interior of one leaf five-parted at the brim. COROLLA, five heart-ſhaped petals united at their baſe. STAMINA, numerous filaments that coaleſce below, and form a column, and kidney-ſhaped antheræ. PISTILLUM, a roundiſh germen, and ſlender ſtyle, five-parted at top, each part having a capitated

capitated ſtigma. PERICARPIUM, a quinquevalvular, quinquelocular capſule, and kidney-ſhaped ſeeds.

There are many ſpecies of this genus, but not more than four or five commonly cultivated in the Engliſh gardens; of which ſome are hardy, and others ſo tender as to require a ſtove in this country.

*Hardy Kinds.*

[1]HIBISCUS *Syriaca.*

*Syrian Hibiſcus, commonly called Althæa Frutex.*] Hath a ſhrubby ſtem and branches, forming a buſhy head, five or ſix feet high; garniſhed with oval, wedge-ſhaped, alternate leaves, cut at top into three indented lobes; and from the ſides of all the young ſhoots, numerous, large, pentapetalous, ſpreading flowers, of different colours in the varieties, having all dark middles, darting out each way in radiant directions towards the extremity of each petal.

*Varieties of this are;*] *Althæa Frutex* with white flowers—with red flowers—pale purple flowers—deep purple flowers—with yellow flowers—and with variegated flowers, called Painted Lady *Althæa Frutex*—likewiſe with ſilver-ſtriped leaves—gold-bloached leaves.

All theſe varieties are ſhrubby, flower in Auguſt, producing ſuch great quantities of flowers in daily ſucceſſion for three or four weeks, that the ſhrubs appear covered therewith, making a moſt delightful appearance, and are the greateſt ornaments of the autumn ſeaſon, of almoſt any of the ſhrubby tribe.

[2]HIBISCUS *Trionum.*

*Trionum, Bladder Ketmia, Venice Mallow, or Flower of an Hour.*] Hath an herbaceous branchy ſtalk, growing a foot and a half high; garniſhed with three-lobed leaves, deeply jagged on the edges into oppoſite obtuſe ſegments; and from the joints of the ſtalks yellowiſh flowers with dark-purple bottoms, having the inner cup ſwollen like a bladder: hence the name, Bladder Ketmia.

This ſpecies is annual, ſometimes called Flower of an Hour, (*Flos Hora*) from the ſhort duration of its flowers, which in hot dry weather they but juſt open, and wither away in an hour or two; but theſe are ſucceeded by a plentiful daily ſucceſſion for a long time.

*Tender Kinds.*

[3]HIBISCUS *Mutabilis.*

*Changeable-flowered Hibiſcus, commonly called China Roſe.*] Hath a ſhrubby, ſoft, ſpongey ſtem, branching into a ſpreading head, riſing ten or twelve feet high; adorned with heart-ſhaped, five-angled, ſerrated, ſhining-green leaves, but pale underneath; and from the axillas of the ſtalk and branchs, large, pentapetalous, ſpreading flowers, appearing firſt white, gradually changing to a bluſh-red colour, and from that to a purple,

[4]HIBISCUS, *Roſa Sinenſis.*

*Roſe of China, or Double China Roſe.*] Hath a ſhrubby tree-like ſtem, dividing into a ſpreading head, riſing twelve or fourteen feet high; oval, acuminated, ſerrated leaves; and from the ſides of the branches, large red flowers, having many oblong roundiſh petals in ſeveral ſeries, like a large double roſe; and are exceedingly elegant, which, by way of pre-eminence, is by botaniſts called, the *Roſe of China* (*Roſa Sinenſis.*)

[5]HIBISCUS *Malvaviſcus.*

*Viſcous Mallow, with ſcarlet flowers.*] Hath a ſhrubby ſtalk, branching ten or twelve feet high; heart-ſhaped, angular, crenated leaves; and from the wings of the ſtalks ſcarlet flowers, with the petals twiſted together; ſucceeded by roundiſh beautiful ſcarlet berries of a viſcous, or clammy nature.

The flowers of all theſe ſpecies of Hibiſcus, conſiſt of five largiſh heart ſhaped petals, and numerous ſtamina, forming a column below (ſee the *Characters*); and in moſt of the ſorts the flowers are numerous and very ornamental.

Thoſe, of all the ſorts, are but of ſhort duration, but are ſucceeded in moſt by new ones daily.

The *Hibiſcus Syriacus*, commonly known by the name of Althæa Frutex, is originally of Syria, but ſo hardy that it will grow here almoſt any where in an open ſituation; and is ſo ornamental when in bloom, that all the varieties merit admittance into every ſhrubbery in the moſt conſpicuous point of view, where the different varieties will have a moſt beautiful effect.

Their propogation is by ſeed, by layers, and by cuttings.

By Seed.—This is procured from abroad by the ſeedſmen; and March and April is the ſeaſon for ſowing it, which may either be ſown in pots, and plunged into a ſlender hot-bed to forward them, or may ſow them in a bed of light earth in a warm ſituation, covering it half an inch deep; the plants will ſoon come up, giving water in ſummer, and a little ſhelter in ſevere froſts; and when two years old plant them out in nurſery rows.

By Layers.—Autumn is the proper time; give the ſhoots a little cut through the bark at one or two joints, and lay them in the

uſual way: they will be rooted in one year.

By Cuttings.—March and April is the time to plant them: chooſe young ſhoots, which if planted in pots and plunged into a hot bed, will more readily ſtrike; though if planted in a ſhady border, many of them will alſo put out roots.

The ſecond ſort, commonly called Bladder Ketmia, is a hardy annual of the flowery kind, and merits a place in the collection of hardy annuals in the open borders, &c.

Its propagation is by ſeed, which may be ſowed either in autumn or ſpring, in the place where you deſign the plants ſhall flower, in patches, ſeveral ſeeds in each; leaving, however, but two or three of the beſt plants in each patch.

The three tender ſpecies being all natives of China, require to be continued moſtly in a ſtove in this country; the firſt two of them produce flowers of the moſt ſingular beauty and elegance, equalling moſt of our fineſt roſes, and both of which flower in great perfection in our ſtoves; and in Aſia, their native ſoil, are ſome of their fineſt flowers: we often ſee them painted in many of the Chineſe pieces, as alſo on the porcelain ware, to embelliſh china bowls, and other china veſſels, particularly the flower of the *Hibiſcus Mutabilis*.

However, as all the three ſpecies will flower beautifully here, and ſometimes perfect ſeeds, they are worth the attention of thoſe accommodated with hot-houſes; keeping them always in pots of rich earth, and retaining them conſtantly in that department; for although they will ſucceed in the open air in the heat of ſummer, and in a good greenhouſe in winter, yet rarely flower well without the continual ſhelter of the ſtove.

The propagation of theſe three tender kinds are effected by ſeed, and ſometimes by cuttings.

By Seed.—March, April, or May, is the time to ſow it, and ſhould have the aid of a hot-bed: ſow it, therefore, in pots of rich earth, half an inch deep, and plunge them in any hot-bed under glaſſes, or in the bark-bed in the ſtove; and when the plants are two or three inches high, plant them out in ſeparate ſmall pots, give water, and plunge them alſo in the hot-bed.

By Cuttings.—Plant ſhort cuttings of the young ſhoots in pots, in ſpring or ſummer, and plunge them in the bark-bed.

HIERACIUM Hawkweed.

The plants are hardy herbaceous perennials; one of which is retained as a flowery plant, has oval leaves, and annual ſtalks a foot high, ſurmounted by compound-flowers in a corymbus.

Claſs and order, *Syngeneſia Polygamia Æqualis*.

*Characters.*] CALIX, many narrow unequal leaves. COROLLA, many hermaphrodite ligulated florets, in one general cup, each five parted at the top. STAMINA, five filaments and cylindric antheræ. PISTILLUM, an oval germen, ſlender ſtyle, and two recurved ſtigma. PERICARPIUM, none. SEMINA, a four cornered ſeed to each floret, crowned with down, ſitting in the calix.

There are many ſpecies, but not more than one uſually cultivated, viz.

HIERACIUM *Aurantiacum*.

*Orange coloured Garden Hieracium, ſometimes called Grim the Collier*] Hieracium with many oblong oval, entire leaves, crowning the root; an upright, ſingle, hairy, almoſt leafleſs ſtalk, a foot high, terminated by reddiſh orange-coloured flowers, in a corymbus, having dark coal-aſh-coloured calices, whence the cant name, Grim the Collier.

This is a hardy perennial, with fibrous durable roots, but annual ſtalks, which riſe in ſpring, flower in June, continuing in ſucceſſion two or three months, ripen ſeeds in autumn, and the ſtalks ſoon after decay.

It is proper furniture for the fronts of any of the compartments of the pleaſure garden.

Its propagation is by ſeed, and by parting the roots. Sow the ſeed in autumn or ſpring, in a bed or border, and rake them in; and in June, when the plants are two or three inches high, prick them out in beds to remain till autumn; then tranſplant them where they are to remain.

By parting the Roots.—In autumn or ſpring divide the roots into ſlips or off ſets, and plant them where they are to flower.

HIPPOPHAE, Sea Buckthorn.

Of this genus there are two hardy deciduous ſhrubs for the ſhrubbery, adorned with ſpear-ſhaped and oval entire leaves, and male and female apetalous flowers.

Claſs and order, *Dioecia Tetandria*.

*Characters*] CALIX, male and female flowers on different plants, having monophyllous two-parted cups. COROLLA, none. STAMINA, four ſhort filaments, and oblong

angular antheræ. PISTILLUM, a roundiſh germen, ſhort ſtyle, and thick erect ſtigma. PERICARPIUM, a globular unilocular berry, and one ſeed.

The ſpecies are;

[1]HIPPOPHAE *Rhamnoides.*

*Rhamnoides, or European Willow-leaved Sea-Buckthorn.*] Hippophae with a ſhrubby ſtem, branching irregularly eight or ten feet high, having a dark brown bark, and armed with a few thorns; ſpear-ſhaped, long, narrow, ſeſſil leaves, of a dark-green above, and hoary underneath; and male flowers in ſmall cluſters, and females on ſeparate plants, growing ſingly, ſucceeded by berries in autumn.

[2]HIPPOPHAE *Canadenſis.*

*Canada oval-leaved Sea Buckthorn.*] Hath a ſhrubby brown ſtem branching eight or ten feet high; oval leaves, and male and female flowers on ſeparate plants.

Both theſe ſhrubs are very hardy, the firſt grows wild on the ſea-ſhores in ſeveral parts of England, and the ſecond in America.

They are retained in gardens as furniture for the ſhrubbery to encreaſe the variety with their two-coloured leaves, being of a dark green above, and of a hoary white underneath; and in winter, when devoid of foliage, their young ſhoots being covered with turgid, irregular, ſcaly buds, exhibit alſo a ſingular variety.

They are cultivated in all the nurſeries for ſale; and may be tranſplanted any time in open weather from October till March.

Both ſorts are propagated abundantly by ſuckers from the root, by layers, and by cuttings of their young ſhoots. All of which may be performed in autumn, winter, or ſpring.

HOE, for hoeing ground, &c.

A Hoe is a moſt uſeful and well known garden inſtrument, of which there are two principal ſorts: a Drawing-hoe, and a Scuffling-hoe. The former of which is, however, of the moſt general uſe.

Drawing-hoe.—This is the moſt common and uſeful kind of Hoe for moſt ſorts of hoeing work: which being fixed with its edge inward, the workman in uſing it, always draws towards him, and is one of the moſt uſeful implements of gardening for many purpoſes: ſuch as drawing drills for ſowing many ſorts of ſeeds and roots; for looſening the earth about, and moulding up the ſhanks of plants; and hoeing down weeds between all ſorts of plants, that ſtand diſtant enough to admit it; and is the beſt adapted Hoe for thinning out eſculents to proper diſtances to acquire their proper growth, ſuch as onions, carrots, parſneps, turneps, ſpinach, &c. by cutting up all the ſuperfluous plants, or ſuch that grow too cloſe, and at the ſame time cuts up all weeds, as well as looſens the earth effectually about the remaining plants; which always proves very beneficial culture to all vegetables.

But of the Drawing-hoe kind, there ſhould be three or four different ſizes, from ſix or eight inches width, down to an inch and a half, as deſcribed below.

Firſt ſize.—This is a large Hoe for common uſe, about ſix or eight inches by four broad, fixed on a long handle for both hands, and is the proper ſort to uſe for all common hoeing-work; ſuch as drawing drills for ſowing peas, beans, kidney-beans, &c. (ſee DRILL SOWING) and is the moſt eligible ſized Hoe for hoeing between rows of all thoſe kinds of plants, and all others that ſtand diſtant enough either in rows, or otherwiſe, for the hoe to paſs between them, both to cut down all weeds and looſen the ground, and to earth up the ſtems of the plants. It is alſo the proper ſized Hoe for hoeing turneps, eſpecially the general crops of the larger kinds, to thin them out to proper diſtances, and cut down weeds; likewiſe for all other purpoſes of hoeing where the plants ſtand diſtant, both in the kitchen and pleaſure-garden: and this is the proper ſized Hoe for general uſe.

Second ſize.—This ſhould be about four inches broad, and is uſeful for hoeing among various plants, where the former ſort of Hoe cannot be commodiouſly employed, and to thin ſuch eſculent crops that require but moderate diſtances; ſuch as the ſmall early Dutch turneps for the firſt crop; alſo for the general crop of carrots, parſneps, ſpinach, &c. this is alſo a proper ſized Hoe for hoeing flower-beds and borders, where the plants ſtand cloſe.

Third Size.—This ſhould be two inches and a half, but not more than three inches broad, fixed on a ſhort handle to uſe with one hand; and is for the purpoſe of ſmall-hoeing onions, to cut them out the full diſtance they require to grow to their proper ſize. Likewiſe for early crops of carrots, ſpinach, &c. and is a very convenient ſized Hoe for hoeing between many other young

or ſmall plants where a larger Hoe cannot be readily admitted.

Fourth Size.—This ſhould be but an inch and a half broad, fixed on a ſmall ſhort handle for one hand, and is of a proper ſize for ſmall-hoeing onions the firſt time, where they ſtand pretty cloſe, and where it is not deſigned to thin them out at once to their full diſtance, but to leave them rather thickiſh for culling, &c. and will be found very convenient for occaſional uſe among many ſmall crops.

Each of the above ſizes of drawing-hoes will be found extremely uſeful in their turns; and every gardener ſhould furniſh himſelf with a proper ſet, as the expence is but trifling, and are ſold by moſt of the nurſerymen, and at all the ironmongers ſhops.

Always keep the edges of the Hoes ſharp by occaſional grinding on a grind-ſtone, that they may cut clean at every ſtroke, and the work will be both more eaſily, effectually, and expeditiouſly performed.

Scuffling-hoe.—This is commonly called a Dutch Hoe, as being much uſed in Holland for ſcuffling their ſand-walks, &c. it is fixed with the edge outward, on the end of a long handle, ſo as the perſon uſing it, puſhes it from him, and goes backward, never treading on the hoed ground, as with the drawing hoe; and as to ſize, is from about four to ſix or eight inches wide, open in the middle, for the mould and weeds to paſs through, ſo as not to be drawn in heaps; having a long ſocket at the back part, in which to fix the handle, which may be five or ſix feet long.

This Hoe is very proper for ſcuffling over any piece of ground to deſtroy weeds that is clear from crops, or between crops that ſtand wide, and in which a perſon may make conſiderably more expeditious work than with a Drawing-hoe, eſpecially when the weeds are not ſuffered to grow large; in which caſe one man can do as much as two. Obſerving, however, this Hoe is adapted principally for cutting down weeds, or ſtirring the ground between wide crops, as above noticed; but not proper for hoeing out crops of eſculents, nor for earthing up the ſhanks of plants, nor for hoeing where the plants ſtand cloſe.

This Hoe for cutting down weeds will alſo make great riddance in ſhrubberies and wilderneſs quarters, where the ſhrubs ſtand diſtant from one another.

It is alſo one of the beſt ſorts of Hoes for ſcuffling over ſand-walks, or others of looſe materials, to deſtroy weeds, moſs, &c.

This kind of hoe will alſo be found very uſeful to run over flower borders, to cut up ſtraggling weeds; which, being fixed on a long handle, may be effected by ſtanding in the walks, without treading on the borders.

It may be had at all the nurſeries, and at the ironmongers.

HOEING, a neceſſary garden culture performed by hoe, to deſtroy weeds, looſen the ſoil, and to mould up the ſhanks of plants.

Hoeing is the moſt expeditious method of deſtroying weeds between all plants that ſtand diſtant enough to admit the hoe between: obſerving, that all Hoeing deſigned principally to deſtroy weeds, ſhould always be performed in dry weather, and the more ſunny the better, eſpecially when the weeds are not to be raked off, that they may die as they are cut down, or at leaſt be ſo much flagged or withered by the ſun as not to grow again; cut deep enough to cut the weeds nearly up by the roots, which may be eaſily effected to all the annuals, or ſeed-weeds; for if they are only ſtumped off, they will ſoon ſhoot out again; obſerve alſo in the courſe of Hoeing, not to draw the earth and weeds in heaps, as often done, as the weeds, if not raked off, will often grow again; let, therefore, the work of Hoeing be always performed ſo evenly, that all the weeds be turned upon the ſurface clear out of the mould; and if any are unavoidably drawn in heaps, or the earth adhere much about the weeds ſo cut up, always diſperſe them by a ſtroke of the Hoe, that all the weeds may be turned fairly above the ground for the ſun and air to kill them.

The above work of Hoeing down weeds, is performed either by a Drawing or Scuffling-hoe, as may be convenient, according to the hints given under the article Hoe.

But Hoeing, beſides its uſe in expeditiouſly deſtroying the weeds, it at the ſame time, by looſening the ſurface, diſpoſes the ground to receive the greater benefit from the air, dews, rains, &c. to the great nouriſhment of all ſorts of plants, and by breaking up the ſurface, dividing the clods, and ſtirring the earth, keeps it freſh, it proves a very beneficial culture to all vegetables, as will be evident from practice and obſervation: in every ſoil; and in ſoils apt to bind

after much wet, which cauſes the plants to appear of a ſtinted growth, apply a Drawing-hoe, cutting deep enough to looſen the ground two or three inches down; it will encourage the plants to put out freſh fibres, add vigour, and greatly promote a free growth.

Likewiſe Hoeing up earth about the ſhanks of plants is a very eſſential piece of culture, ſuch as earthing up rows of peas, beans, kidney beans, cabbages, cauliflowers, &c. which is ever of great ſervice in promoting ſtrength and vigour in the plants.

HOT-BEDS. Beds formed either of horſe dung, or tanner's bark, raiſed two, three, or four feet high, and covered with garden frames, glaſſes, &c. deſigned to effect a certain degree of heat, for raiſing tender plants, and for forwarding others to early perfection.

By the aid of Hot beds we are able, in our northern climate, to imitate that of diſtant warm countries, ſo far as to exhibit their plants, flowers, and fruits often in very great perfection, which without ſuch artificial aids of heat, could not poſſibly be raiſed, nor continued in theſe parts of the world; for by the aſſiſtance of Hot beds, vaſt numbers of ſeeds, which would otherwiſe remain years in the earth, and ſome never grow at all, are made to germinate, form plants, continue their growth, and produce their flowers and fruits, as in their native ſoil. By Hot-beds, alſo, cuttings and ſlips of many ſorts of trees and ſhrubs, which would otherwiſe remain inactive and periſh, are made ſoon to emit fibres at bottom, and ſhoots at top, and become each a new vegetable.

Likewiſe by Hot-beds many of our valuable eſculents of the kitchen-garden, that ſucceed in the full ground at one time of the year or other, are brought to perfection a month or two ſooner than they would naturally attain in the open air, and ſome a quarter of a year or more ſooner than they could otherwiſe be obtained, exemplified in the cucumber, which by no art can be made to grow in the full air before May or June, nor be brought to produce fruit in the open ground before July; but by the aid of Hot-beds, are obtained often in the middle of winter, or early in ſpring: again, aſparagus, which grows all the year in the open ground, yet its natural produce never arrives to perfection before May or June; but by hot-beds we obtain it all the winter in any weather, from November until the arrival of the natural crops: peas, beans, kidney beans, raddiſhes, carrots, ſtrawberries, and various ſallad herbs and other plants, which grow in the open ground, are by Hot-beds forwarded to perfection a month, and ſometimes two or three, ſooner than they otherwiſe could be procured.

We alſo by Hot-beds forward many of our hardy fruits, as cherries, plums, apricots, peaches, grapes, figs, &c. ſix weeks or two months ſooner than they naturally would in the open ground.

By Hot-beds many beautiful and curious annual flowers are raiſed to perfection, that could ſcarcely attain to a flowering ſtate here in the full ground, See ANNUAL PLANTS.

And by Hot-beds many hardy flowers, both of the herbaceous and ſhrubby plants, are brought to flower in winter, and early in ſpring, which do not naturally appear before May and June, ſuch as pinks, carnations, ſweet-williams, narciſſus, jonquils, hyacinths, tulips, roſes, honeyſuckles, and various other plants of moderate growth, which you may incline to forward into an early bloom.

Hot-beds, therefore, are of the greateſt utility in gardening: they are, as before mentioned, compoſed of two principal materials, horſe-dung and tanners bark; the former of which is the moſt common ſort of Hot-beds for general uſe, have been already treated of under the articles BARK-BED, and DUNGS: it will, however, alſo be proper to give ſome hints reſpecting each in this place, under two ſeparate heads, viz. horſe-dung Hot-beds, and tanners-bark Hot-beds.

### *Horſe-dung Hot-beds.*

As horſe-dung Hot-beds are of general utility in gardening, I propoſe to handle this article at ſome length, for the benefit of thoſe unacquainted with their nature.

Horſe-dung Hot-beds are the moſt commonly uſed for all forcing-work in the kitchen-garden, for raiſing tender or early eſculents; alſo for working forcing-frames, to have early fruits and flowers; for this material, horſe-dung, being not only the moſt eaſily obtained in all places, but cheaper than Tanners-bark, the other Hot-bed material; beſides, that after having performed its office as a Hot-bed, it becomes rotten and buttery, and the moſt excellent manure that can be for the garden;

garden; ſo that horſe-dung Hot-beds are preferable for general uſe in the kitchen-garden. See DUNG.

The ſort of horſe-dung to be underſtood for the purpoſe of Hot-beds, is the dung and wet litter together, daily cleaned out of ſtables where horſes always ſtand, and are littered down with plenty of ſtraw every night, which being rendered wet by the urine and dung of thoſe animals, compoſes the principal material for a dung Hot-bed; for the dung alone without litter would do nothing, but the litter being thus moiſtened, and cleared out along with the dung, are both mixed together, and collected in any conſiderable quantity in a heap, or formed into a bed, its moiſture, by the urine and dung of the horſes, which is naturally of a ſtrong hot quality, quickly promotes a fermentation and ſtrong heat, often ſo violent as not to be able to bear one's hand therein, and even to burn the roots of plants, if any were planted while the vehement heat continues; but by a proper preparation is brought to a moderate degree of warmth, ſuitable to the growth of vegetables.

Obſerve alſo that the dung muſt be freſh; that is, ſuch as has been but a few weeks in collecting from the ſtables, or at leaſt that hath not lain ſo long in the dunghill as to exhauſt itſelf, and greatly loſe its heat, and beginning to rot; for the newer the dung the better, its heat proving always the moſt effectual and durable, provided it is properly prepared, as hereafter directed, previous to its formation into a bed. And although older dung may, by ſhaking up and mixing coal-aſhes therewith, be brought to heat a little again, yet it will be ineffectual, and of ſhort duration, and deceive you; nor ſhould you, if poſſible, uſe that very dry ſtuff, often to be met with, eſpecially that which has heated greatly, burned, and exhauſted its fermenting property in the dung-hill, appearing very dry, and of a whitiſh mouldy colour, for this will never acquire a proper heat; therefore always chuſe the freſh, or new-made ſteamy dung, full of moiſt litter, which, although ever ſo long or ſtrawey, if of a moiſt temperature, by mixing well together in a heap, the whole will acquire a proper fermentation for a Hot-bed; and the freſh dung will be of double the duration of ſuch that have lain long and exhauſted its firſt fermenting property, as above obſerved, in the dunghill.

Sometimes coal-aſhes are mixed with dung to promote a more quick and durable heat; which, however, is more neceſſary for dung that has ſomewhat exhauſted itſelf by being long in the dunghill, when by mixing a buſhel or two of aſhes to a cart-load of dung, will have ſome effect in contributing to the ſtrength and duration of the heat; but as to freſh dung full of heat, it requires no ſuch aid, and although it may help to continue the heat longer, yet is apt at firſt to promote a too fierce burning heat, therefore I would adviſe it to be uſed but ſparingly in freſh dung.

The dung, previous to its formation into a Hot-bed, ſhould be moved from the dung-hill, well mixed, and caſt up in a heap, or, if a large quantity, in a long high ridge, to lie a week or two to prepare it to a proper temperature for making the bed; therefore, with a dung-fork, take the long and ſhort ſtuff as it comes to hand, ſhaking it up, and mixing it all well together, in a pretty high heap, or ridge; to lie ten, twelve, or fifteen days, or more, as you ſhall judge proper, according to its quality, for all the parts to be equally moiſtened and meliorated, and for the ſtrong rank ſtench and ſteam to evaporate; and if in ſix, eight, or ten days, according to the quantity, the whole is turned over, caſting it up in a heap again, it will give greater vent to the noxious vapour and burning heat to paſs off, and by mixing the parts again, the whole maſs will be every way better prepared for the purpoſe of a Hot-bed: obſerving that without the above previous preparation of ſhaking the dung up in a heap, it is apt to heat violently when formed into a bed, ſo as to burn the earth thereof, as well as the roots of the plants, and ſend up a ſtrong rank ſteam, pernicious to all vegetables; and a Hot-bed of this burning quality, is apt to loſe its heat ſuddenly; for all which reaſons never omit preparing the dung as above for all kinds of dung Hot-beds.

With reſpect to the expoſure and ſituation wherein to make the Hot beds; all Hot beds ſhould be made principally in the kitchen-garden, in a ſunny ſheltered ſituation; and where the ground is rather dry, and free from ſtanding water at all ſeaſons; and it is of much importance to contrive to have the place in a part of the garden neareſt the dung, to have as ſhort wheeling as poſſible, which is an article of great attention where there is a conſiderable quantity of framing.

As to the preparation of the place for making the Hot-bed; dung Hot-beds are ſometimes made entirely on level ground, but moſt commonly in trenches, a foot or two deep; but for early work, in winter or ſpring, I ſhould adviſe to make the bed moſtly above ground; that when the heat declines, both ſides of the bed may be lined with hot dung quite to the bottom, ſo as the whole bed, from thence to the top, may have an equal benefit of the lining to revive its decaying heat; which lining is eſſentially neceſſary during winter, and in ſpring until the middle or latter end of May, when the heat of the ſeaſon renders them unneceſſary; whereas when the Hot bed is made in a trench, at an early ſeaſon, when linings muſt be added to ſupport a conſtant regular heat, all that part of the bed within the ground, is conſequently deprived of the advantage thereof, unleſs you ſhall dig the earth away all round, to the depth of the bed, wide enough to admit of a lining, for as all dung Hot-beds generally begin to decline their heat in three or four weeks, the heat muſt at any rate be revived or renewed accordingly, during the continuance of cold weather, by an augmentation of freſh hot dung, piled up againſt the ſides, which in practice is called lining the beds; and by applying theſe linings occaſionally, the heat of a dung Hot-bed may be continued four or five months, provided the whole bed from bottom to top can be thus lined: this, therefore, ſhews the neceſſity of making theſe Hot-beds for early work entirely on the ſurface of the ground; beſides, when Hot-beds are made in deep trenches in winter, water is apt to gather in the bottom, and chill the lower part of the beds; I would, therefore, alſo adviſe, that in low, or very moiſt ground, the place where the Hot-bed is to ſtand, to be rather a little the higheſt, particularly for early beds, that all moiſture from the dung, rains, ſnow, &c. may drain off. Some, however, are of opinion, that making Hot-beds in a deep trench, preſerves the heat longer; this in particular caſes as mentioned below, may have ſome effect, but is not proper at all where lining is neceſſary; therefore for early work, be perſuaded always to make the beds moſtly on level ground.

If it is, however, intended to adhere to the old method of making the Hot-bed in a trench, make the trench five feet wide, if for frames and lights; if for hand-glaſſes, or paper frames, three or four; and if in winter, not more than a foot deep; and if wet ground, half that depth is full enough, for the reaſons before aſſigned: but if towards ſummer, the trench may be made a foot and a half deep, that is, for Hot-beds in May, when the ground will be dry, the weather becoming ſettled, and no danger to be apprehended from copious ſtanding moiſture, and the warm ſeaſon nearly arrived, when but little aid of lining will be requiſite, may then with propriety be made in trenches, eighteen or twenty inches deep, as directed for the hand and bell-glaſs cucumbers and melons: and the whole bed thus made may be earthed all over ſo cloſely, as to cover every part of the dung, to confine the heat, that it may retain a due temperature without lining at all, till the middle or latter end of June, when the warm ſettled weather will be arrived, and the natural temperature of the ſeaſon will enable the plants commonly raiſed in theſe kind of Hot-beds, to ſucceed without any farther aid of artificial heat, the remainder of the ſummer.

As to the dimenſions of dung Hot-beds they ſhould generally be a parallelogram, or long ſquare, ranging nearly eaſt and weſt to any length convenient; about four feet and a half or five feet broad, if to be covered with common garden-frames; and three and a half or four feet, if for hand-glaſſes; raiſing them, if in winter, or early in ſpring, three or four feet high, allowing for ſettling, as they will ſettle a foot or more in a fortnight's time after making: and the early beds ought to be ſubſtantial, otherwiſe they will not ſupport a due uniform temperature of heat for the growth of plants at an early ſeaſon, which by aid of linings muſt be effected till the arrival of warm weather; obſerving however that Hot-beds made in winter ſhould be three feet and a half high at leaſt when firſt made, or if four the better. Thoſe made in March need not not be above a yard high, in April two feet and a half, and in May two feet may be a ſufficient thickneſs, and even eighteen inches about the latter end of that month; remarking as above-ſaid, that all Hot-beds are to be ranged lengthwiſe eaſt and weſt, or nearly ſo; but more eſpecially thoſe intended to be covered with frames, that they may exactly front the ſouth for receiving all poſſible benefit of the ſun. And as to the method of making the beds, ſee *Making the Hot-bed.*

Obſerve

Obſerve alſo, that all dung Hot-beds muſt be moulded or earthed at top, for the reception of ſeed and plants, covering every part of the dung at top that no ſteam may riſe therefrom without firſt paſſing through a body of earth, which otherwiſe, being of a rank pernicious nature, would prove deſtructive to moſt vegetables. Likewiſe, if the ſeed or plants are to be in pots, the bed muſt alſo be earthed at top, of due thickneſs in which to plunge the pots to their rims; remarking, that the proper depth of mould neceſſary to lay upon theſe Hot-beds is from about five or ſix to ten or fifteen inches, according to the uſe or nature of the plants to be raiſed therein, which is generally noticed in the reſpective articles; though from about five to eight or ten inches is the moſt common neceſſary depths of earth for dung Hot-beds. See *Earthing the bed*, below.

A Hot-bed may be made either for a one-light, two-light, or three-light frame, or for two, three, or more three-light frames in a range; the three-light frames being the moſt common ſorts for general uſe, eſpecially to receive plants from the ſmaller frames, to remain to grow to perfection, or to any conſiderable ſize. See FRAMES. But a Hot-bed deſigned chiefly as a ſeed-bed for raiſing a few plants for tranſplantation, as cucumbers, melons, tender annuals, &c. a bed for a ſingle frame, either a one-light or a two-light box, may be ſufficient, eſpecially for private uſe, or for early work, or may be for a three-light frame, according to the quantity of plants required. And as the tender plants raiſed in either of theſe frames advance in ſize, freſh Hot-beds of greater extent for two or three-light frames muſt be made for their reception, according to the directions given under the reſpective articles requiring the aid of Hot-beds: obſerving that all dung Hot-beds made in winter, or any time in ſpring, before the middle of April or beginning of May, ſhould generally be covered with frames and lights, eſpecially for tender plants. But Hot-beds made late, i. e. from about the the middle or latter end of April until the end of May, will ſucceed for ſeveral ſorts of plants, to be covered with hand or bell-glaſſes, alſo with oiled paper frames, as cucumbers and melons for latter crops, and for raiſing many ſorts of annual flower-plants that require forwarding in moderate Hot-beds. And late Hot-beds, for forwarding any of the more hardier ſorts of ſeeds, plants, and cuttings, in default of frames, or hand-glaſſes, &c. may be arched over with hoops, and covered occaſionally in bad weather and every night with mats until June; or you may contrive very cheap and eligible covers with oiled paper for theſe late Hot-beds, which are greatly preferable to mats, but under either of which may be raiſed many of the hardier annuals, as African and French marigolds, chryſanthemum, China aſter, ten-week ſtocks, &c. alſo ſtrike cuttings of many ſorts of plants; but for ſtriking many ſorts of the hardier cuttings that require aid of Hot-beds, oiled paper frames are the beſt covers that can be uſed for that purpoſe in May, June, and July; as they at the ſame time afford both ſhelter from cold, and ſhade from the ſun, yet admit its influence both as to light and heat in a proper degree for the work of vegetation.

According therefore to the above hints of dimenſions, &c. ſtake out on the ground the width and length of the intended Hot-bed, allowing, if for frames, for it to be two or three inches wider on each ſide than the frame; and according to that ſtandard may either make the bed entirely on the ſurface, or in a trench agreeable to the rules before laid down.

*Making the Hot-bed.*

To make the Hot-bed, ſhake ſome of the longeſt, or moſt ſtrawey dung along the bottom, to lay the firſt formation of the bed; then take it long and ſhort together as it comes to hand, and ſhake it evenly on every part, raiſing the ſides perfectly upright, ſtreight, and as firm as poſſible, forming the corners alſo always full and very firm, keeping the middle well filled with the beſt dung; and as you go on, beat each layer of dung evenly and firmly down with the dung-fork; or, if very long dung, it may be trodden, to ſettle every part equally. In this manner proceed till the bed is arrived to its deſigned, or neceſſary height, according to the ſeaſon, as before obſerved, or uſe it is intended for, as is always hinted in the reſpective articles, making proper allowance of a foot, or thereabouts, for ſettling; raiſing that intended for frames, two or three inches higher in the back or north ſide than in front, to give the greater ſlope of the glaſſes to the ſun, finiſhing the top even in every part; and when the bed is thus raiſed to the height intended, trim up all the ſhort dung remaining at laſt round the bed, laying it on the top ridgeways along the middle, which may either

then,

then, or rather, if a ſtrong bed, in a few days after, when the bed has ſettled a little, be levelled to make good all inequalities, and ſmooth the ſurface; then ſet on the frames, &c. and earth the bed agreeable to the rules hereafter laid down.

The proper frames and glaſſes in general uſe for theſe Hot-beds, are deſcribed under the article FRAMES. The common ſorts are one-light, two-light, and three-light frames; the two former generally for ſmaller purpoſes, as ſeed beds, or nurſery beds, for raiſing and forwarding plants for final tranſplantation into three-light frames; ſo that one or two of each of theſe ſizes may be ſufficient, and have a proper ſupply of the three-light frames for general uſe, as before obſerved. See FRAMES.

Hand-glaſſes for covering late Hot-beds are of two ſorts; ſquares, or leaded hand-glaſſes, and bell glaſſes. The ſquare glaſſes being four-ſquare, framed with lead, and many panes of glaſs, the glaſs being worked into the lead-work, are made by the glaziers, at from two to three ſhillings and ſix pence each, according to their ſize, ſtrength, and goodneſs of the glaſs. The bell-glaſſes are ſhaped like a bell, all of one piece, are blown at the glaſs-houſes, where they are ſold, from ten to fifteen pounds a hundred, or two or three ſhillings a-piece, and are rather preferable to the ſquare glaſſes for the growth and preſervation of plants, only there is this advantage in the ſquares, that if broke they can be readily mended; but the bells, when broken, are generally rendered uſeleſs, though if not broke into pieces, they may ſometimes be joined by a cement of white-lead colour; and the London gardeners, ſome of which work two or three thouſand hand-glaſſes in a ſeaſon, generally prefer the bells to the other ſorts. Either of theſe ſorts of glaſſes are proper to uſe for Hot-beds any time from about the middle or latter end of April to the beginning or middle of June.

Paper frames being light open frame-work, conſtructed like the roof of a houſe, or top of a covered waggon, and covered with oiled paper, are moſt excellent for ſummer Hot-bed work, i. e. Hot-beds made in May and beginning of June. See CUCUMBER and PAPER FRAMES.

Having, however, formed the Hot-bed for either of the above covers, if it is pretty ſubſtantial, particularly thoſe for frames, it will not be proper neither to frame it for good, nor earth it, for ſeveral days, until a little ſettled, and the firſt violent heat ſubſided; for the heat will be very ſtrong and frequently of a burning quality for the firſt week or two after it is made: it may, however, be proper to ſet the frames and glaſſes on both, to defend the bed from exceſſive rains or ſnow, and to draw up the heat ſooner, to forward the bed to a proper temperature for the reception of the mould and ſeeds, or plants, obſerving to tilt the upper ends of the lights a hand's breadth high, or ſhove them ſo much down in dry weather, that the great ſteam always ariſing in Dung Hot-beds may paſs freely off; for in ſtrong Hot-beds neither the earth, ſeed, or plants ſhould be put in till the fierce heat and violent ſteam has a little abated, which may be in ſix, eight, or ten days, or a fortnight, according to the ſubſtance of the Hot-bed, for that for one frame only, will ſooner work itſelf to a proper degree of heat for the purpoſe of vegetation, than a range for two or more frames, though a Hot bed of ſlender ſubſtance may be framed, &c. earthed and all, as ſoon as it is made, as no great danger is to be apprehended from burning, and more particularly thoſe for ſmall frames, hand-glaſſes, &c. but to Hot-beds of any conſiderable ſubſtance, either for one or more large frames, always uſe the above precaution previous to earthing, ſowing, or planting, eſpecially if you intend to ſow or plant in the earth of the bed; or even if you ſow or plant in pots, plunging them in the earth, that although they may be raiſed up, if there is danger of burning at bottom, yet but few plants thrive well when there is a very great ſteam and vehement heat.

Where there are a conſiderable range of ſubſtantial Hot-beds for many frames, the placing the frames thereon before they are to be fixed for good, may not be convenient; in which caſe it is proper, in default of the frames, to have mats, or dry long litter ready to cover the top, in caſe of exceſſive rains, or ſnow falling, which might chill and retard the bed greatly from becoming of a due temperature for the reception of the earth, &c. and ſometimes occaſions a bed to become of a burning quality, which otherwiſe would be of a regular temperature.

In ſtrong Hot-beds deſigned for ſtrength and duration of heat, it will, as ſoon as they are made, be proper to provide ſome ſharp-pointed ſticks, two feet long, to thruſt down into the middle of the bed in different parts, that

that by pulling out the ſticks daily, and feeling their lower parts, will enable you to judge of the working and temperature of the bed, to know more readily when of a proper ſtate for the reception of the mould and plants, which in ſtrong beds muſt not be truſted therein till the burning heat is paſt.

If the Hot-bed is, therefore, of good ſubſtance, and for the large frames, it is proper to let it remain ſome days to ſettle, before it is framed for good, becauſe, notwithſtanding all the care in making, it will often ſettle unequally, and ſhould be levelled before it is earthed; in from about three to five, ſix, or eight days, according to the nature of the dung, or ſubſtance of the bed, it will have ſo far ſettled as to diſcover the inequalities, if any; when, if the frames and glaſſes were placed thereon, for the purpoſes above mentioned, they muſt be taken off, and all the inequalities made even by levelling the top as you ſhall ſee neceſſary, making the ſurface firm, and ſmooth it off neatly with the back of the ſpade, and directly put on the frame, &c. for good; then, as a preſervative againſt burning the earth by the violent heat of the bed, ſome freſh neat's dung, if it can be conveniently procured, may be ſpread upon the top of the bed, particularly along the middle part, an inch thick or more, eſpecially in ſtrong Hot-beds, under frames for ridging-out cucumbers and melons, plaiſtering it under the middle of each light, where each hill of plants is to ſtand, in circular patches, about eighteen inches or two feet diameter, as directed in the article CUCUMIS, for cucumber and melon Hot-beds: this done, put on the lights, tilting them at top to give vent to the ſteam, as before obſerved; and as ſoon as the bed is become of a moderate temperature, and there is no danger from too violent a heat, put on the earth, to receive the ſeed or plants.

With reſpect to earthing the bed; obſerve that ſubſtantial dung Hot-beds for frames, after being covered with the frames, &c. they ſometimes heat violently the firſt week or fortnight; and that if the earth was put in during the fierce heat, it, by confining the heat and ſteam ſtill more cloſely, will be in danger of being burnt to a whitiſh mouldy colour; and burn alſo the roots of the plants, if any were ſown or planted; and when the earth is thus burnt by the heat of the dung, no ſeeds nor plants can vegetate or thrive in it; ſo that when this happens to be the caſe, all the earth muſt be taken out, and replaced with the like quantity of freſh compoſt. Therefore, in Hot-beds of any conſiderable ſubſtance, either for one or more frames, examine, previous to moulding it, its ſtate of heat daily with good attention, both by the ſticks, and by thruſting your hand down into the dung: thus you will judge regularly of the working of the bed from its firſt formation, to its greateſt heat; and thence till the vehemence of it begins to abate, and become proper for vegetation; then prepare to put in the mould. It is an obſervation worth notice, that when a ſort of *fungi*, or ſpawn of the muſhroom tribe, which often riſe in dung Hot-beds, begins firſt to appear, is a certain ſign that the Hot-bed, if ever ſo ſtrong, is in a proper temperature both for the reception of earth, and plants.

But, as we formerly noticed, ſlender Hot-beds, made but about eighteen or twenty inches depth in dung, ſeldom require ſo much precaution as above, which is directed chiefly for ſtrong beds, made from about two to three or four feet high, for large frames, to ſhew what is often abſolutely neceſſary to be done, for the benefit of the plants to be cultivated in them: therefore as to ſlender Hot-beds, as their heat is never ſo violent nor durable, may, according to their ſubſtance, either be earthed as ſoon as made, or in two, three, or four days after, as you ſhall judge proper by the above rules, which is moſt commonly mentioned in the different articles.

Obſerve, however, even in the ſtrongeſt Hot-beds, to watch the opportunity of its proper temperature; not to loſe any time, for it to waſte its heat ineffectually, without being earthed, ſowed, or planted.

The earth for all ſorts of Hot-beds, ſhould be rich and light, and of a dry temperament; but more particularly for early work in winter and ſpring, eſpecially for tender plants, ſuch as cucumbers, melons, tender annuals, &c. for very moiſt earth rots ſuch tender plants while young, binds too cloſe, and by its compactneſs confines the heat and ſteam, ſo as to burn at bottom, and ſcorch the roots of the plants; let, therefore, ſome mould be always ready, drying in ſome airy ſhed, two or three weeks before-hand, for early work. See COMPOSTS.

The depth of earth neceſſary to be laid on theſe Hot-beds, is according to the purpoſes for which the Hot-bed is deſigned, whether principally for ſowing ſeed, or for the reception of plants, and according to the nature of the

plants, or whether deſigned chiefly for plunging pots; but generally from about five or ſix, to ten or twelve inches, is the common depth; obſerving if for ſowing ſeeds to raiſe plants for tranſplantation, the depth of mould to be from about four to ſix inches, and if the plants are to remain where raiſed, to acquire their full growth, not leſs than from about ſix or eight to ten or twelve inches depth of earth, will be requiſite; and if for the immediate reception of plants, to remain, or for ſtriking cuttings of any ſort, &c. from about ſix to eight, ten, or twelve inches of mould will alſo be neceſſary, according to the ſize or growth of the plants; for thoſe which naturally have large tops, either ſpreading like cucumbers, &c.or upright growers, muſt have depth enough of mould for their fibres to draw proper nouriſhment to ſupport their ſtalks and branches; as for example, cucumbers and melons being very branchy ſpreading plants, producing large fruit, conſequently require more ſubſtance of earth than ſmall ſallad herbs, and ſo in proportion to other plants that are to grow to perfection in the Hot-bed: and if for plunging pots, containing either ſeed or plants, ſeveral inches of earth is neceſſary, according to the ſize of the pots, in which to plunge them, without going into the dung of the bed; therefore, according to theſe hints, you will readily judge of the proper depth of the earth generally neceſſary upon dung Hot-beds; other particulars are exhibited under the reſpective articles.

In earthing the beds, be careful to cover every part of the dung within the frame therewith, eſpecially after the plants are come up, or any planted, that no ſteam may riſe immediately from the dung upon them, for the ſteam of horſe-dung being of a very rank cutting nature, as is evident by its effect upon one's eyes, that if it attacked the plants, without firſt paſſing through a body of earth, would deſtroy moſt ſorts it encounters in its paſſage from the dung; which is called ſteaming the plants.

With regard to ſowing or planting ſeeds or plants in the above Hot-beds, obſerve as directed for moulding the bed, that if the bed is of ſtrong ſubſtance, and under frames, be careful neither to ſow nor plant till the danger of burning is over, eſpecially not unleſs the ſowing or planting is performed in pots, that may be moved up as occaſion requires; but at any rate it is always better to wait a day or two, than to endanger burning good plants: do not, however, loſe time when the bed is ready, for it is neceſſary always to have a lively heat at firſt to promote a quick germination in the ſeeds, or to ſtrike and ſet the plants a-going, ſo as to aſſume a free growth at firſt ſetting off; ſo that in ſlender or very moderate Hot-beds, the ſeeds and plants may be committed to the earth as ſoon almoſt as it has acquired a little heat.

And as to the method of ſowing the various ſeeds and plants commonly raiſed in theſe Hot-beds, it being different according to the ſorts, ſo is generally exhibited under each reſpective article.

In reſpect to the management of the Hot-beds after being ſowed or planted with ſeeds or plants, it is often different, according as the different plants may require, but take the following general hints: the ſeed or plants being put in, the glaſſes are to be continued conſtantly on until June or July, when the weather is become ſettled and warm, particularly to all the tender kinds of plants; freſh air, however, muſt be admitted daily, at all opportunities in mild weather, by tilting the upper ends of the lights, or, if hand glaſſes, by propping up one ſide, from about half an inch to three or four high, according to the heat and ſteam in the bed, and temperature of the outward air; ſhutting all cloſe in due time towards evening, and muſt be kept cloſe every night during the cold weather; cover alſo the glaſſes every night with mats until June, eſpecially for the more tender ſorts of plants; one or two mats thick may be ſufficient covering while the bed is in full heat; but when it decreaſes, you may augment the covering by the addition of another mat; never ſuffering the mats to hang down low over the ſides of the frame and bed as is often practiſed intentionally to keep out the cold more effectually; but this not only excludes the free air too much, to the great detriment of the plants, by drawing them up weak, and of a ſickly yellow colour; it alſo promotes a rank ſteam, pernicious alſo to the health of all vegetables, and often proves the death of many of the more tender herbaceous tribe.

When the firſt great heat of the bed is abated, which may be in a week or fortnight after it is made, if in winter or early in ſpring, when cutting winds, or driving cold rains and ſnow may be expected, it is good culture to lay a quantity of dry long litter, either ſtraw, waſte hay, or fern, round the ſides of the bed, quite from the

the bottom, half a foot or more thick, and as high up the frame as the earth withinſide reaches: it will greatly preſerve the heat in a proper temperature, and the bed will not require to be lined ſo ſoon as it otherwiſe would do.

But when the heat of the bed naturally declines, or becomes of a weakly temperature, it muſt be renewed by adding freſh hot dung around the ſides, which is called lining the bed, and is particularly neceſſary for all dung Hot-beds, made any time in winter or ſpring, until the beginning or middle of May, that are deſigned to continue plants any conſiderable time; but thoſe Hot-beds made in May generally ſupport a due degree of heat without lining, until the arrival of warm ſettled weather, as before obſerved. With reſpect, however, to linings to early beds, they may ſometimes require a repetition of new linings three or four times, eſpecially thoſe made in winter, to continue them in a uniform heat; theſe linings ſhould be of the hotteſt dung, and applied quite from the bottom to the top of the bed, and about eighteen inches wide at bottom, drawing it in to about a foot wide at top, raiſing it four or five inches up the frame, to allow for ſettling, but not more, for the top of the linings, when ſettled, ſhould be but very little above the bottom of the frame, leſt its heat burn the earth adjoining to the frame withinſide: and to prevent ſteam from riſing too copiouſly from the linings, lay a ſtratum of earth on the top, two inches thick, continuing it cloſe up to the bottom of the frame, that no ſteam may ariſe that way, for the rank ſteam immediately from dung, without firſt paſſing through a body of earth, is deſtructive to moſt plants; according as the lining ſettles down lower than the top of the bed, add more freſh dung, obſerving the precautions as above; and when the heat of the lining is exhauſted, it muſt be renewed with a freſh quantity of dung, or ſome of the beſt of the former lining may be ſhaken up and mixed with a good quantity of new, and worked up in a lining, as before directed; in this manner we muſt continue to ſupport the heat of dung Hot-beds as long as the aid of artificial heat is requiſite for the growth of plants contained therein. See LINING.

For Tanner's-bark Hot-bed, ſee BARK-BED, where it is fully explained.

HURA, Sand-box tree.

It is an exotic tree of South-America, kept here in our hot-houſes for variety, and for the beauty of its ample cordated foliage; producing monoecious flowers, ſucceeded by large ſwollen capſules in America, where the natives uſe them for ſand-boxes, for writing deſks: whence it derived the appellation Sand-box tree.

Claſs and order, *Monoecia Monadelphia.*

*Characters.*] CALIX, male and female flowers apart on the ſame plant, the males in an oval amentum, each floret having a ſmall two-leaved cup, which in the female is monophyllous and ſwelling. COROLLA, none. STAMINA, one filament, and a double ſeries of antheræ. PISTILLUM, a roundiſh germen in the bottom of the calix, a very long cylandrical ſtyle, and large funnel-ſhaped ſtigma, divided into ten equal ſegments. PERICARPIUM, a globular, ligneous, twelve-furrowed fruit, of twelve cells, and ſo many ſeeds, burſting open at top with an elaſtic force and great noiſe.

The ſpecies is;

HURA *Crepitans.*

*Exploſion-tree, or American Hura, commonly called Sand box-tree.*] Hath an upright, ſoft, ligneous ſtem, dividing into a branchy head, riſing twenty feet high, adorned with large heart-ſhaped leaves, eight or ten inches long, and near as broad, on long foot-ſtalks; and monoecious, apetalous flowers, the males in oval amentums, the females ſeparate, having each a very long ſtyle, and large funnel-ſhaped ſtigma, divided at the brim into ten ſegments, appearing like petals, ſucceeded by a large round, compreſſed, woody capſule, with twelve deep furrows, and ſo many internal cells, and the like number of ſeeds, which when ripe, the capſules burſt with an elaſtic force and exploſion, ſometimes equal to that of a piſtol, diſcharging the ſeeds to a conſiderable diſtance.

The whole plant abounds with a milky juice, and the ſtalk and branches are ſomewhat ſucculent.

This beautiful and curious exotic being a native of the hotteſt regions, in this country muſt always be kept in the hot-houſe; potting it, therefore, in pots of rich light earth, and plunge them into the bark-bed, where the plants will attain twelve or fifteen feet ſtature, and frequently produce flowers; watering it ſparingly in winter.

Its propagation is by ſeed; theſe are procured from abroad by the importers of ſeeds, generally arriving in the ſpring, which ſhould be ſowed as ſoon as poſſible in pots of rich earth, and plunged in a bark hot-bed; when

the plants are come up about three or four inches high, plant them out into ſeparate ſmall pots, giving water, and plunge them alſo into the tan-bed, or into that in the ſtove, retaining them always there, ſhifting them into larger pots occaſionally. See STOVE PLANTS.

HUMULUS, the Hop-plant.

One ſpecies only conſtitute this genus; a hardy climbing perennial, producing annual ſtalks, twining round any ſupport to a great height, terminated by ſcaly cluſters of flowers and fruit, of admirable value to the brewers, in procuring an agreeable bitter to beer, rendering it more wholeſome, and keeping it from ſouring.

Claſs and order, *Dioecia Pentandria.*

*Characters.*] CALIX, male and female flowers on different plants; the males having a five-leaved cup, and the females a quadrifid, acute, general involucrum, and the partial one four-leaved, and contains eight florets, each furniſhed with a monophyllous perianthium. COROLLA, no petals. STAMINA, five capillary filaments in the males, and oblong antheræ. PISTILLUM, a ſmall germen, two awl-ſhaped, reflexed, ſpreading ſtyles, and acute ſtigmas. PERICARPIUM, none. SEMEN, a roundiſh ſeed ſucceeds each female floret, lodged in the baſe of the calix.

There is but one ſpecies, which admits of two varieties; the male hop—and female hop.

The ſpecies is;

HUMULUS *Lupulus.*

*Humulus, or Hop-plant, formerly, Lupulus.*] Hath a long, ſlender, fibrey, perennial root, ſending up annually ſeveral climbing, long, ſlender, rough, tough, purpliſh ſtalks, twining round any ſupport fifteen or twenty feet high; adorned with large palmated rough leaves, on long foot-ſtalks, and whitiſh-yellow, apetalous, ſcaly flowers, in pendulous cluſters from the ſides and ends of the ſtalks; appearing in July, and the ſeed, and ſcaly covers, which are the Hops, ripen in Auguſt and September.

*Varieties.*] Male Hop-plant, bearing male flowers only, growing in long cluſters—female Hop-plant, bearing female flowers only, produced in roundiſh, ſcaly, leafy cluſters.

The male Hop grows wild in hedges and bank ſides, and is never cultivated: its young ſhoots, however, in ſpring, prepared like aſparagus, affords a palatable food.

The female Hop is the only ſort that is cultivated, and admits of ſome varieties, by the Hop-planters termed: early white Hop—long white Hop—oval Hop—ſquare garlick Hop, &c. and theſe varieties of female Hop-plants are the ſorts cultivated, to produce that valuable commodity called Hop, well known to all for its excellent properties in improving all ſorts of beer and ale.

Theſe plants are rarely cultivated in gardens, except a few, by way of climbers, for variety; for they will twiſt round poles, or any ſimilar ſupport, twenty feet high or more.

They are very hardy, and will grow any where; obſerving, however, thoſe intended for uſe, ſhould have an open ſunny expoſure, and as good ground as poſſible; in any open field that produces good graſs or corn, prepared for their reception by digging or ploughing; though when large quantities are cultivated for ſale, ploughing is the moſt expeditious and cheapeſt tillage; and the ſets, i. e. cuttings of ſuckers from the root are planted in rows, ſix or eight feet aſunder in ſpring, which ſhoot up the ſame year into ſtalk, and produce ripe Hops in autumn; and the roots abiding for years, ſend up a freſh crop annually.

*Propagation and Culture.*

Their propagation is by cuttings of the ſuckers ariſing immediately from the roots within the ground, every part of which will grow, cutting them ſix or ſeven inches long, each having three or four buds, or eyes, for emitting ſhoots, and are taken from the roots of the plants, of any old plantation in full perfection of bearing; being particular to chuſe good ſorts, and ſuch that are good bearers, trimming each ſet from all old vine, and any hollow, or bad part: the ſpring of the year, at Hop-dreſſing time, is the proper ſeaſon for procuring the ſets; that is February, March, and beginning of April; they may alſo be propagated by layers of the young ſhoots in ſummer; cutting off their tops at the time of laying, they will root and form ſets for next ſpring.

It is of conſequence to be choice in the ſort of Hop to plant; they ſhould be all of a a ſort, not early, middle, and late kinds planted together, which by ripening at different times, would occaſion great trouble in gathering.

The early white Hop comes firſt, is a fine Hop, but an indifferent bearer. The long white Hop is next, is a good bearer, and valuable

luable ſort. The ſquare garlick-hop is lateſt, is a plentiful bearer, but a coarſer Hop than the former.

March and April is the proper time for planting them.

The ground ſhould be well digged, or elſe deeply ploughed, and well rough-harrowed, to break all clods, and render the ſurface fine and ſmooth; and if the ground is rather poor, ſome well-rotted dung, or a compoſt of dung and earth together, may be laid in heaps to mix in each hole.

Then having the ſets ready, proceed to plant them by line, in ſtraight rows, ſix or eight feet diſtance, and the ſame diſtance in each row, in the quincunx order. Be provided with a long line, to reach quite acroſs the ground, and in which, at every ſix or eight feet, tye a knot, or ſmall bit of rag; then ſtretching the line, and having a quantity of ſmall ſharp-pointed ſticks, place one down at each of the marks, and in each place a hole is to be digged, a foot and a half wide, and filled up again with the earth and rotten dung, for the reception of the plants, four or five in each, as directed below; having thus marked out one line, remove it ſix or eight feet farther, placing it ſo as the marks thereon may be oppoſite the middle of the ſpaces or intervals of the firſt row, that the plants may ſtand in the quincunx form, and place the ſticks as before; ſo on to a third, and every row to the end. But the way to have them in an exact quincunx order, is to have a triangular gage, made with three pieces of pan tile lath, &c. eight feet long, joined together in form of a triangle, making the ends croſs each other, about an inch or two in a forked manner; then having placed one row of ſticks by line, as above, apply two ends of the triangle to two of the ſticks, one ſtick between each fork, and then plant a ſtick in the fork of the other end of the gage, to form the next row; thus moving the triangle along, place it to two more ſticks in the firſt row, as before, plant another ſtick in the fork of the other end, and ſo proceed to the end of the row, and in the ſame manner ſet out every row till the whole is completed; thus you form an exact quincunx, and the plants will alſo range exactly every way, and appear very beautiful when they are poled.

Then, where each ſtick ſtands, dig a round hole about eighteen inches wide, and a moderate ſpade deep, breaking the earth well, caſting ſome out, and add to the reſt ſome of the rotten dung or compoſt from the heaps laid for that purpoſe, mixing it well with the earth of the holes, forming it in a ſort of hillock in each hole; tho' where the ſoil is freſh and naturally good, there will be no abſolute neceſſity for dung; ſo may only dig the holes to looſen the earth well, at the ſame time drawing ſome of the top mould on each ſide round the hole in a ſmall hillock, the width of the hole, and two or three inches high, levelling the top, and hollow it a little; the places thus prepared in either of the above methods, are ready for the plants.

The plants, or ſets, are then to be planted four or five in each hill, with a dibble, one in the middle, and the reſt round it, at four inches diſtance, and all nearly even with the general ſurface, preſſing the earth cloſe about them, and cover them over with finely-broken mould as you go on, and this finiſhes the work.

The plantation being thus formed, the next care is to keep it clean from weeds by hoeing: the firſt hoeing will be requiſite in May, chuſing dry weather, and, as you proceed, draw a little mould round about each hill to form a greater body of earth immediately about the plants, continuing the hoeing during the ſummer as there ſhall be occaſion.

The plants will ſhoot forth into vine tolerably ſtrong, early the ſame year; ſo that in May ſmall poles may be placed to each hill, for them to run upon, as hereafter directed, and they will produce a few hops the ſame year, though ſome do not pole them at all the firſt ſeaſon, only twiſt the vine into a bunch in June, at the top of each hill, regardleſs of any crop, as it is apt to weaken the young plants.

The next neceſſary work is in ſpring following to dreſs or prune the Hops, and February and March is the proper ſeaſon, when the ground is to be dug or ploughed, and the earth about the hills of plants, be removed away near to the ſtocks or roots, clearing it quite away from the tops of the principal roots with an iron picker, for the convenience of pruning cloſe to the head of the ſtock; then with a ſharp knife trim off all ſhoots of laſt year, or the remaining part of them, cloſe to the head of the ſtocks or ſets; clearing away alſo all young ſuckers, and directly trim in the earth around each hill, and cover the top of the ſtocks with mould two or three inches thick; and this is to be every year repeated.

After

After this the plants will ſoon ſhoot forth into vine, or bind, when long poles about fifteen or twenty feet in length, muſt be placed for them to run upon: April or the beginning of May, when the ſhoots are a foot long, is the ſeaſon for this work, three poles muſt be ſet to each hill, around the outſide, let deep into the ground, by making holes for them with an iron crow, ſo as to place them with their top inclining a little outward from each other, to keep the plants from entangling, and a ſpace between two of them be left open toward the ſouth, to admit the ſun more freely.

The Hops being thus poled, they will for the general part naturally twine themſelves about the poles, obſerving to direct ſuch with the hand as do not readily catch hold of themſelves, turning them the way of the ſun's motion, and tie them looſely with dried ruſhes or other ſoft bandage, training two or three vines to each pole, and all above that ſhould be plucked up, if the plantation be old; but if young, wrap them up together in the middle of the hills.

The next work is ſummer-digging, in the beginning of June, which is digging about the hills, and caſting up ſome fine earth around, and upon each, which is ſometimes repeated again the beginning of July, to make all the hills of a proper ſubſtance, for the better nouriſhing of the plants.

After the plants are grown up, if you find any of them under-poled, taller poles muſt be placed near thoſe that are too ſhort, to receive the vines from them; for unleſs they have due length of pole, they will not yield a full crop; and if the vines are very ſtrong, and over-top the poles, it is common to ſtrike off the heads of the ſhoots with a ſwitch, whereby they throw out many lateral branches, well charged with cluſters of fruit.

In July the Hops will blow, and towards the end of Auguſt will begin to ripen; the tokens of which are the bunches of fruit imparting a ſtrong Hop-like ſcent, dry and hard to the touch, and browniſh colour of the ſeed.

At theſe tokens of maturity the Hops are fit for gathering, when they ſhould be picked with all poſſible expedition, for a ſudden ſtorm of wind, or great rains would do conſiderable damage, by breaking down the vine and diſcolouring the Hop.

This work of picking Hops muſt be performed in dry weather if poſſible.

A certain number of hills in a ſquare ſpace is to be cleared at a time, generally about eleven, and a large ſquare bin, or wooden frame eight feet long, by three broad, having a cloth within hanging on tenter-hooks, is to be placed in the centre to receive the Hops; then proceeding to the work of picking, cut up the vine of the above number of hills, and pull up the poles, uſing a wooden inſtrument like a lever, having at one end a forked piece of iron with teeth on the inſide, which will readily raiſe them out of the ground; then laying two poles at a time acroſs the bin, and two or three perſons may ſtand on each ſide to pick the Hops therein, picking them very clean without leaves and ſtalks; and as the bin is filled, it muſt be emptied two or three times a day, as there may be occaſion, into a hop-bag, and carried to the kiln to dry.

The kiln for drying Hops is the ſame as a malt-kiln, covered with a hair cloth, on which they ſpread the hops, which ſhould be ſpread ten or twelve inches thick; and a charcoal fire is commonly uſed, continuing an even ſteady fire, not fierce, but rather increaſe it by degrees, and in about nine hours let the Hops be turned, and in two or three hours more, they may be taken off, by that time the brittleneſs of their ſtalks, and eaſy falling of the leaves determine them to be ſufficiently dried.

They are then to be carried into dry upper rooms, to lie three or four weeks to toughen, otherwiſe they would become powder in bagging.

The bagging is performed in large bags made of about four ells and a half of ell-wide coarſe cloth; about a handful of hops is firſt tied into each corner at bottom, to ſerve as handles; the bag is then faſtened to a hole of due width in the floor, made for that purpoſe, having a hoop faſtened to the mouth of the bag, on which it reſts on the edges of the hole; then a perſon puts the hops into the bag, while another is continually treading them down, till the bag is full; the bag is then unfaſtened from the hoop, and let down, and cloſe up the mouth, tying a handful of Hops alſo in each corner, as in the bottom part, they are then ready for market.

The moſt conſiderable plantations of Hops in England, are in Kent and Surry, and ſome parts of Suſſex and Hampſhire, but more particularly Kent, where the Hop gardens exhibit a delightful appearance in ſummer, and from

from which county it is amazing to ſee the numbers of great waggon loads daily brought to London in September and October, principally to the Borough of Southwark, where are the great magazines of them for the ſupply of the brewery; great quantities are alſo brought by water, and depoſited in warehouſes in Thames-ſtreet, belonging to the hop factors.

A plantation of Hops will continue in good bearing ſeveral years, provided the ground is properly manured.

The proper manure is well-rotted dung, or a compoſt of dung and earth together, prepared ſome time for that purpoſe; and of either from about twenty to forty cart load, is the common allowance for an acre; the former quantity is generally allowed when dung is ſcarce, laying it only along the hills of plants to be dug in, in winter or ſpring, but the beſt way is to allow about forty load, and dig or plough it in any time from October till March; and ſuch a dreſſing need not be repeated but once in two or three years.

Every year after the ground is cleared from the Hops, care ſhould be taken of the poles, which if they could be laid under any covered place, would greatly preſerve them; but for want of ſuch convenience, they are placed in parcels upright in the open air, firſt fixing three or ſix poles firmly in the ground, in a triangle manner, wide at bottom, and tied together at top; then ſet as many of the reſt of the poles about them as ſhall ſeem convenient in each parcel.

As the poles decay, they muſt be recruited with new ones.

The poles may be of any wood, but the ſorts commonly uſed are aſh, birch, maple, ſycamore, willow, poplar, and cheſtnut, the latter of which is the moſt durable of all.

It requires about three thouſand poles to an acre, allowing three to each hill.

HYACINTHUS, Hyacinth, and the *Muſcari*, or Muſk Hyacinth.

The plants are low, herbaceous, bulbous-rooted, flowery perennials, for the flower-garden and open borders; ſending up annually from the root, long narrow leaves, and upright flower-ſtalks, from about half a foot to twelve or fifteen inches high, terminated by many bell-ſhaped ſix-parted flowers, in a large erect ſpike; ſome of which are of admirable beauty and elegance, and the floriſts pride, particularly that celebrated ſpecies the *Hyacinthus Orientalis*, which comprehends ſome hundreds of delightful varieties, all beautiful ornaments of the ſpring.

Claſs and order, *Hexandria Monogynia*.

*Characters.*] CALIX, none. COROLLA, is monopetalous, bell-ſhaped, ſix-parted, and reflexed at top, and three ſmall nectariums like pores, placed on the point of the germen. STAMINA, ſix ſhort ſubulate filaments and connivent antheræ. PISTILLUM, a roundiſh, trigonous, three-furrowed germen, ſhort ſtyle, and obtuſe ſtigma. PERICARPIUM, a roundiſh, trigonous, trilocular capſule, and roundiſh ſeeds.

To this genus the botaniſts have joined the *Muſcari*, or Muſk and Grape Hyacinth, which before was always conſidered as a diſtinct genera. There are in the whole about thirteen ſpecies of *Hyacinthus*, and of which the following are thoſe principally retained in the Engliſh gardens.

1 HYACINTHUS *Orientalis*.

*Oriental, or Eaſtern Hyacinth.*] Hyacinthus, with a large, purpliſh, bulbous root, ſending up ſeveral narrow erect leaves, eight or ten inches long, amidſt them; an upright, robuſt, ſucculent flower-ſtalk, from about ten to fifteen inches high, adorned upward with many large funnel or bell-ſhaped flowers, ſwelling at the baſe, and cut half way into ſix parts; collected into a large pyramidal ſpike, of different colours in the varieties; flowering in April and May.

*Varieties are.*] Oriental Hyacinth, with ſingle white flowers—double white flowers——red ſingle and double flowers—fleſh-coloured ſingle and double flowers——blue ſingle and double flowers—purple-blue ſingle and double flowers.

Of each of the above ſorts, there are many intermediate varieties, amounting in the whole to ſome hundreds, differing from one another in ſome reſpect or other, as in the ſhades or teints of each reſpective colour; the ſize and poſition of the pips or florets, their number and mode of arrangement in each ſpike, the form and ſize of the ſpikes, and ſome other variations; all of which varieties have been obtained from ſeed, and by which many new ones of the above principal ſorts are annually gained; each variety is, by the floriſts, diſtinguiſhed either by the name of the place where firſt raiſed, or perſon who raiſed them, or that of illuſtrious perſonages, as the greateſt kings, the braveſt generals, famous poets, and celebrated

brated ancient hiſtorians, the gods, goddeſſes, and the like; often beſtowing ſuch names on them as denote their value: ſo that in this prodigious multitude now of many hundreds, and new ones annually acquired, to which names are given, according to the fancy of the different propagators, it would be impoſſible to exhibit any accurate liſt here of any thing ſo variable, but the names of the capital varieties moſt in vogue, are always to be found in moſt of the eminent ſeedſmen's catalogues; who alter or make additions according as new ſorts occur.

This ſpecies of Hyacinthus and its varieties poſſeſſing a degree of pre-eminence above all the other ſpecies of this genus, are the ſorts commonly eſteemed and cultivated by the floriſts, and the ſorts generally meant and underſtood, when we ſpeak ſimply of the Hyacinth.

[2]HYACINTHUS *Non-ſcriptus*

*Wood Hyacinth, or Hare-bells.*] Hath a ſmall bulbous root; narrow leaves, five or ſix inches long; upright flower-ſtalks, ſix or ſeven inches high; and bell-ſhaped, ſix parted blue flowers, revolute at top, ranged all on one ſide of the ſtalk, appearing in March and April.

*Variety.*] With white flowers.

Both the varieties grow wild in our woods and hedges; and are cultivated in many gardens as furniture for wood-walks, wilderneſſes, &c.

[3]HYACINTHUS *Cernuus.*

*Nodding-flowered Spaniſh Hyacinth.*] Hath a ſmall bulbous root; narrow erect leaves, five or ſix inches long; an upright flower ſtalk, ſix or ſeven inches high; bell-ſhaped red flowers, ranged on one ſide of the ſtalk, and the top of the ſpike nodding or bowing downward; flowering in April.

[4]HYACINTHUS *Amethyſtinum.*

*Amethyſtine-coloured Hyacinth.*] Hath a ſmalliſh bulbous root; upright robuſt flower-ſtalk, a foot high, terminated by many ſmall bell-ſhaped flowers, cylindric at the baſe, and cut at top half into ſix parts, of a deep amethyſtine-blue colour; flowering in February and March.

The following are the Muſcari Hyacinths, diſtinguiſhed by their corolla being more globular and ſwollen than the former ſorts.

[5]HYACYNTHUS *Muſcari.*

*Muſcari, or Muſk Hyacinth.*] Hath a large oval bulbous root, ſending up ſeveral narrow, furrowed, thickiſh leaves, eight or nine inches long, ending in obtuſe points; an upright flower-ſtalk, half a foot high, adorned with oval, reflexed, faded purple flowers, imparting a ſtrong muſky adour.

*Varieties*] With purpliſh flowers below, and yellow at top—and with large yellow flowers.

[6]HYACYNTHUS *Comoſus.*

*Tufted Hyacinthus, commonly called Fair-haired Hyacinth*] Hath a large bulbous root; narrow, ſword-ſhaped leaves, a foot long, diminiſhing to a ſharp point; an upright flower-ſtalk, about a foot high, adorned with angular cylindric flowers, terminated by a tufted cluſter of oval florets, deſtitute of the generative organs; of different colours in the varieties; flowering in April and May.

*Varieties.*] Tufted Hyacinth, with purple flowers—with blue flowers—and with white flowers.

[7]HYACINTHUS *Monſtroſus.*

*Feathered Hyacinth.*] Hyacinthus, with a large bulbous root, ſending up ſeveral narrow, plane, ſmooth leaves, a foot long, ending in obtuſe points; upright flower-ſtalks, a foot and a half high, the upper half garniſhed with many oval blue flowers, in tufted panicles, having finely cut feathered-like petals, moſtly deſtitute of the parts of fructification, ſo never produce ſeeds; appearing in April and May.

[8]HYACINTHUS *Botryoides.*

*Grape Hyacinth.*] Hath a ſmalliſh bulbous root; many narrow, cylindric, canaliculated, erect leaves, half a foot long; an upright ſtalk, ſix or eight inches high, adorned with many ſmall globular, cloſely-placed flowers, in a cluſtered ſpike in the manner of a bunch of grapes; of different colours in the varieties; appearing in April.

*Varieties.*] Grape Hyacinth, with blue flowers—white flowers——and with aſh-coloured flowers.

[9]HYACINTHUS *Racemoſus.*

*Racemous Grape Hyacinth.*] Hath a middle-ſized bulbous root; ſword-ſhaped looſe leaves, ſix or eight inches long; a flower-ſtalk ſix inches high, terminated by many ſmall oval blue-flowers, in a racemoſe-cluſter, cloſely placed at top; flowering in April.

The flowers of all the ſorts, in their characteriſtical, or ſingle ſtate, conſiſt of one hollow, ſomewhat bell-ſhaped petal, cut more or leſs into ſix parts at top; but in the double flowers, the petals are multiplied in ſeveral ſeries, one within another, as in the double

Oriental

Oriental Hyacinth, the flowers of which are conſiderably the largeſt and moſt beautiful of all the ſpecies.

All theſe ſpecies of Hyacinthus, and their reſpective varieties, are hardy bulbous rooted perennials, of great duration in root, but annual in leaf and ſtalk; the leaves ariſing from the root in ſpring, and amidſt them the flower-ſtalk; but one generally from each bulb, is naked, or without leaves, and the upper part is terminated by the flowers, commonly in a ſort of ſpike; in ſome extended wide at bottom, upon their pedicles, diminiſhing gradually to the top, in a pyramidal form, as obtains in moſt of the varieties of the Oriental Hyacinth; flowering principally in April and May, ſucceeded by plenty of ripe ſeed in June and July; then the leaves and ſtalks decay, and the roots loſe their fibres, and become inactive for a month or ſix weeks; during which period is the time to liſt the roots, as may be neceſſary in ſome ſorts annually, eſpecially the Oriental kinds, and in others every two or three years, to ſeparate the increaſed off-ſets from the main bulbs, and to tranſplant them into freſh prepared beds, &c. and being taken up at the above period of reſt, may be kept out of ground till autumn, or even until ſpring on particular occaſions; though they flower ſtrongeſt when planted again the October or November following.

All the nine ſpecies and reſpective varieties are ſo hardy, as to grow freely in any of the open beds or borders in the full ground; flower and produce ſeed annually, and moſt of them increaſe exceedingly by off-ſets of the root.

With reſpect to their uſe in gardens, all the ſpecies and varieties are proper to be employed as furniture to adorn the open borders and flower-beds; the fine varieties of the Oriental Hyacinth is commonly cultivated in beds by themſelves: the common kinds of them, however, along with the other ſpecies, may alſo be planted in aſſemblage with other hardy bulbous ſpring flowers, in the common borders; diſpoſing all of them towards the front in patches, three or four roots together in each patch, placing them three or four inches deep; in which mode of diſpoſition they will effect a conſpicuous variety in April and May.

*Of the Oriental Kinds.*

But the Oriental Hyacinth, the chief of the Hyacinth tribe for beauty, elegance, and variety, is by floriſts commonly depoſited in beds by themſelves, both for the convenience of viewing them more commodiouſly, and to have occaſional ſhelter from the rigours of winter, and during the time of their bloom; for although they are hardy enough to ſucceed without any protection, yet they being rather of a delicate temperature, by allowing them ſhelter on particular occaſions, they are made to blow much larger and fairer, and the bloom continued longer in beauty; and as the fine varieties poſſeſs a degree of pre-eminence, and often purchaſed at a great price, it is certainly moſt neceſſary to allow them all poſſible aſſiſtance to blow them in perfection.

They are ſold in great variety by all the ſeed dealers. The prices are from three pence per root, up to five or ten pounds, or more; and ſome varieties are in ſuch high eſteem among floriſts, that twenty or thirty pounds is ſometimes given for a ſingle bulb.

The Dutch ſorts are in moſt eſteem; that is, thoſe that are imported annually from Holland, for thoſe people excel all Europe in raiſing the greateſt variety from ſeed, and alſo in blowing them in the greateſt perfection; owing either to ſome ſecret in their mode of culture, or that the nature of their ſoil is peculiarly adapted to the growth of the bulbs; but let that be as it may, great quantities are annually imported from that country by the dealers, and ſold by moſt of the eminent ſeedſmen, who have catalogues of the names of the varieties, and their prices annexed, which are various according to their ſorts.

As many perſons may not have inclination for cultivating the high-rated varieties, there are many of the inferior ſorts that produce very pretty flowers, which may be had at moderate prices, and may be cultivated either in beds, or in the open borders, in common with other hardy bulbous-rooted flowers without any protection, and will blow freely, tho' probably not ſo large and elegant as thoſe fine varieties indulged with the nice management of a profeſſed floriſt, as hereafter mentioned; yet will exhibit a very beautiful bloom, and make ſome of the prettieſt ornaments of the flower-borders.

Having once obtained ſome roots of any of the varieties, you may increaſe your ſtock annually by off-ſets, which they, however, do not yield ſo freely as ſome other bulbs, ſo muſt make the moſt of every one that offers; and they all furniſh plenty of ſeed

every year, by which new varieties may be raiſed, for all the new ſorts are always firſt obtained by that mode of propagation; and each reſpective variety ſo obtained, is afterwards increaſed by off-ſets of the root. The raiſing them, however, from ſeed, is tedious in practice, for the ſeedling bulbs are hardly brought to flower in leſs than four or five years; but as by this means the ſtock may be greatly increaſed, and many new good flowers acquired, it rewards for the toil, in enjoying the pleaſure of ſeeing flowers of one's own raiſing, and the ſtock greatly multiplied either for pleaſure or profit.

The principal properties that conſtitute a good Hyacinth of the Oriental kind, is, the ſtem perfectly upright, of moderate length, and ſo ſtrong and well proportioned, as to ſuſtain the weight of the florets without bending. The florets ſhould be large, ſwelling below, expanded above, and numerous, ten or fifteen at leaſt, but are often twenty or thirty in number, and ſhould be placed equally round the ſtem, the pedicles on which they grow, longer below than above, diminiſhing gradually in length upward, ſo as to repreſent a pyramid, each pedicle ſo robuſt as to ſupport the florets without drooping.

*Propagation and Culture.*

The propagation of all the varieties is by off-ſets from the root, like other bulbous-rooted perennials; ſee BULBUS; and by ſeed, to obtain new varieties, both of which methods of propagation as hereafter directed. We will firſt exhibit their general culture.

With reſpect to the culture of this celebrated ſpecies of Hyacinth and varieties; let it be remarked, that they ſucceed beſt in a light ſoil, and will proſper in any common earth of a garden of that temperature, but delight more particularly in ſandy ground; allow them, however, as light a ſoil as your garden poſſibly affords, in a dry, open, ſunny ſituation, diſtant from the drip of trees, for theſe bulbs, if planted in ſtrong, or very moiſt land are apt to rot in winter, or become diſeaſed; if, therefore, the ſoil of your flower-borders or beds are of a ſtrong heavy quality, that part deſigned principally for Hyacinths, may be meliorated by adding light materials, ſuch as any light ſandy earth, from the ſurface of ſome field, common, or other place, (not out of deep pits) or driſt or ſea-ſand, or any upper ſandy ſoil, or light earthy compoſt; and ſhould the ſoil of the borders, &c. be of a very light, ſharp, ſandy nature, a portion of light, pliable, loamy earth, and neats dung, or well-rotted dung of old hot-beds, will make a fine compoſt for the Hyacinth, being previouſly added long enough for the dung to be converted into mould. After all, if the common earth of the borders is of a moderately light pliable nature, as above obſerved, and has been occaſionally manured with rotten dung, it will ſuit the common ſorts very well without any other preparation than good digging, &c. obſerving, in either caſe, to work the ground well one ſpade deep at leaſt, if the depth of ſoil admits, raiſing the bed or border a little above the general level to avoid copious moiſture, and rake the ſurface ſmooth.

But the floriſts generally prepare a favourite compoſt for their rare kinds of Hyacinths, which is principally this: light ſandy loam, or any ſandy earth from a paſtured field or common, the top ſpit not more than ten or twelve inches deep, of which about one third to one of driſt or ſea-ſand, from the ſurface, and the ſame quantity of rotten neats dung; mixing and caſting the whole in a heap ridge-ways, in ſome dry ſunny expoſure, to lie a year at leaſt, or if two the better. See COMPOSTS. But to the above materials, ſome add alſo a quantity of rotten leaves of trees, thoroughly rotten, tanner's bark, or any perfectly rotten earthy wood, or rotten ſaw-duſt; all of which together greatly improves the compoſition: though as theſe are not always readily obtained, the other compoſt is frequently uſed with great ſucceſs. With either of theſe compoſts a bed is prepared in September, or early in October, four feet wide, and two deep, ſo that a cavity muſt be digged that width and depth, and filled up entirely with the compoſition, ſix inches above the common level to allow for ſettling, leaving it a fortnight or a month to ſettle, and is then ready for the reception of the Hyacinths.

The virtuoſi in theſe plants are careful never to plant the fine ſorts two years together in the ſame bed or earth, for by planting them every year in a freſh bed, or freſh-prepared compoſt, it greatly improves the ſize and beauty of the flowers.

The proper ſeaſon for planting them, is either in October, or firſt fortnight in November, and thoſe then planted, ſhoot early in ſpring, and flower ſtrong at their uſual ſeaſon, April and

and May; but those planted later in autumn, or are continued out of ground till January and February, for a late bloom, will flower weaker and with inferior beauty; so that the principal part should always be planted at the time first mentioned.

If it is designed to plant any of the common, or more ordinary kinds, to adorn the open borders contiguous to principal walks, or lawns near the habitation, to increase the variety in assemblage with other bulbous-rooted spring-flowers, as early tulips, narcissuses, anemonies, ranunculus, &c. they should be disposed towards the front, at about fifteen inches from the edge, in patches of three roots in each, placed four inches deep; and the patches may be from about one yard to three or four distance: here let them stand to take their chance, without any further care, and they will flower in their usual season; and in this mode of disposition will strike the eye most agreeably among the other flowers then in bloom.

But the fine doubles and other valuable varieties are commonly deposited in beds by themselves, as we before observed, for the convenience of affording them occasional protection from inclement weather, these beds should be four feet wide, and well wrought to the depth before mentioned; and if there is any danger of water standing, or much moisture in winter, raise them five or six inches above the general level; but if dry ground two or three inches is sufficient, finishing them gradually rounding in the middle, allowing two-feet-wide alleys between bed and bed. In each bed you may plant four or five rows, lengthways, about nine inches distant in each row, and four or five inches deep: as to the mode of planting, it may either be in drills drawn the above depth, see DRILL-SOWING, &c. or by dibble, or by bedding them in, i. e. with the spade or rake, trimming the earth evenly from off the top of the bed, five inches deep, into the alleys; then draw lines along the surface the above distance, place the roots upon the lines, bottom downwards, nine inches asunder; which being done, cover the roots over with the earth, which was drawn off the bed for that purpose, as evenly as possible, to the proper depth; and as soon as they are planted, in either method, let the surface of the bed be raked smooth, and the work is done.

The bulbs being planted, the next care is to protect the choicest sorts in the beds occasionally, during winter, from severe frost, to ensure the greater success; for although the bulb itself is hardy enough, yet very intense frost is sometimes apt to affect the young new-shot fibres of the root, also the summit of the young advancing flower-bud, and occasion it to blow weaker than it otherwise would; therefore when severe frost sets in, it is easy to guard those in beds; but those disposed about the borders in patches, is not so readily sheltered: but, indeed, they will all blow tolerably well without that precaution. Those in beds, however, may be readily protected by a covering of straw, or any kind of dry strawey litter, three or four inches thick, or may previously arch the beds with hoops, or rods, or with moveable arched frames of open-work, and covered with mats; observing in either mode of covering, to practise it only in severe frosts, for there will be but little danger of moderate frosts penetrating deep enough to do any hurt; nor ever permit the covering to remain a day longer than the severity of the frost continues, the free air being an important article for the welfare of the plants.

Towards spring, when the flower-buds are beginning to appear above ground, the beds of the fine sorts, if intended to allow them all possible protection from inclement weather, should, if not done in winter, be arched over, to be covered every night with mats, particularly at the appearance of sharp frosts, or when there is cold cutting winds, being careful to take them off every morning in mild weather.

In March the flower-stems will advance fast in stature: according as those of the best sorts arrive nearly at their full height, it is proper to support them, by placing a small stick, fifteen or eighteen inches long, down to each plant, being careful not to thrust it into the bulb, and so tye the stems neatly to each stick, whereby the spikes of flowers, which being heavy, would otherwise be borne down by wind or wet, will be preserved in an upright position.

When they arrive to bloom, the curious sorts that are in beds, may be preserved much longer in beauty, by being screened occasionally from the sun and rain, by a sort of awning or umbrella of mats or canvass; observing they should be shaded only from the mid-day sun from about ten to three or four o'clock, and only from excessive rains and boisterous winds, for they should enjoy the morning

and evening ſun, and the benefit of moderate ſhowers; theſe covers are ſometimes contrived like a tent, of width and height enough for company to walk under them to view the flowers, and that the plants may enjoy the benefit of free air; having the ſides to let down and up at pleaſure, like curtains; as alſo the top to draw off occaſionally to admit moderate warm ſhowers; thus may theſe flowers be continued in their fulleſt beauty three or four weeks, and exhibit a fairer bloom than thoſe that are fully expoſed.

After the flowers, however, begin naturally to fade, remove all covering entirely away, that the bulbs and increaſing off-ſets may receive all poſſible benefit from the free air.

After the ſeaſon of flowering is over, the next care is to take up the bulbs, in the floriſts language called, lifting the roots; for the fine ſorts ſhould be taken up at this period, both to ſeparate any off-ſets for encreaſe, and for the benefit of the main bulbs, which will always flower ſtronger than ſuch that are ſuffered to remain two or more years unremoved; ſo always take up the large blowing-roots annually after flowering.

The proper time for this work of lifting the bulbs, is in ſummer, ſoon after they have done flowering, when their leaves begin to turn yellow, as then the bulbs have had nearly their full growth for that ſeaſon; and ſhould by no means remain longer in the ground, as they would be apt to imbibe moiſture, and become ſpongey, and have tendency to rot after removal. Dry weather muſt be choſen, and a trowel, or ſmall ſpade is proper for lifting them, taking them up one and one; and break off the ſtem within an inch or two of its origin, which being thick and very ſucculent, the moiſture thereof might return again into the bulb, to its detriment; then lay them in an airy room, out of the mid-day ſun, to dry off the groſs moiſture gradually, and to ripen the bulbs to a due hardneſs, appearing of a purpliſh tinge, otherwiſe they are apt to rot, being more impatient of humidity than almoſt any other kind of hardy bulbs: but the floriſts generally ripen the choicer kinds of theſe bulbs, after lifting, in a ridge of dry earth in the full air, to promote a more perfect ripeneſs in the whole bulb, as the groſs humidity will be more effectually drawn off by the heat of the ſun, without being expoſed immediately thereto; to do this, part of the earth of the bed where they grew, is directly formed into a low ridge lengthways, roundiſh at top, and both ſides ſloping to caſt off the water; in this ridge place the bulbs, as ſoon as poſſible, bottom downward beſide each other, and cover them with earth an inch or two deep; being thus placed, let them remain about three weeks, during which time, if heavy rains fall, cover the ridge with mats, to keep the earth and roots as dry as poſſible; and thus the ſun's heat through the earth, will evaporate the watery parts of the bulb, and harden it ſo effectually, that no danger of rotting is much to be feared, neither before nor after they are planted again; obſerving, that when the bulbs, by either of the above modes of ripening them, aſſume a bright purple colour, it is notice of maturenes, this colour being peculiar to theſe bulbs, but the more ſtrong and lively the purple tinge appears, denotes the greater perfection.

When the bulbs are, however, properly ripened in either of the above methods, let them be taken up and ſeparated from any off-ſets, well cleared from earth, looſe ſkins, and fibres at bottom; then, after expoſing them an hour or two in the ſun, put them up in boxes ſingly, or upon dry ſhelves out of the ſun, to remain till the ſeaſon for planting them again, obſerving the ſame method as before directed.

Propagation by Off-ſets.—All off-ſets appearing about the main bulbs at the lifting ſeaſon, are to be careſully ſeparated from them, either as ſoon as they are taken up, or after the bulbs have lain to ripen, kept ſeparate, and planted in September or October, in beds by themſelves, in rows ſix inches aſunder, and two or three deep, where let them remain a year or two; then take them up at the proper lifting-ſeaſon in ſummer, and manage as directed for the large blowing roots.

Raiſing them from Seed.—The raiſing theſe bulbs from ſeed, is practiſed by the curious to obtain new varieties, as well as increaſe their ſtock; obſerving, that from the time of ſowing, it will be four or five years before the bulbs will produce flowers; the ſeed ripens in June or July, which may eaſily be ſaved from your own plants, ſuffering ſome of the fineſt ſingles, and half doubles to ſtand to ripen it in perfection.

The proper ſeaſon for ſowing it is September and October; and will come up in ſpring following.

It grows freely in the open ground, in a bed or border of light earth, or if no great quantity is to be ſown, it may be ſowed in pots or boxes, which will be convenient to move occaſionally to different ſituations at different ſeaſons. In either method chuſe light rich earth, make the ſurface ſmooth, ſow the ſeeds evenly, and cover them an inch or an inch and a half deep; if they are ſowed in pots or boxes, let thoſe be plunged to their rims in a dry place, and in November remove them either under a hot-bed frame to have occaſional ſhelter in winter, or cover them at the approach of hard froſt with ſome light dry litter, uſing the ſame precaution alſo to thoſe ſowed in beds, but let them be fully expoſed in all mild weather.

The plants will come up in the ſpring, appearing firſt with very ſmall leaves; keep them very clean from weeds all ſummer, ſift a little earth over the bed in autumn, and in winter uſe the ſame precaution as before; and in the ſecond ſummer, in June, when their leaves begin to decay, take up the young bulbs, to be planted out in nurſery beds, which may be done in Auguſt or September, planting them in ſmall drills two inches deep, having the drills three or four inches aſunder: here let them ſtand two years, ſifting half an inch of earth over the ſurface in autumn, and give occaſional covering in winter: after this they are to be taken up at the uſual lifting-ſeaſon, managed as the other bulbs, and planted in autumn where you deſign they ſhall flower.

*Of the other eight Species.*

The other eight ſpecies and varieties of this genus, Hyacinthus, tho' inferior to the oriental kind, yet conſidered as flowery perennials for embelliſhing the common borders, &c. they effect an agreeable variety, when diſpoſed in little cluſters, in aſſemblage with other low ſpring-flowers: planting them in autumn, any time before Chriſtmas, towards the front, three, four, or five roots in a patch, about three inches deep, and they will all flower in ſpring following. They may be ſuffered to remain unremoved two or three years, when they will be increaſed by off-ſets into large bunches, and ſhould then be taken up at the decay of the flowers and leaves in ſummer, to ſeparate the off-ſets, planting the large roots again in the borders, as before, in autumn; and the very beſt of the off-ſets that you may have occaſion for, may be planted in nurſery-beds for a year or two.

Their propagation is effected plentifully by the off-ſets, as above-mentioned, which all the ſorts produce in great plenty, and which may be taken up every ſecond or third year, when the leaves decay, and the off-ſets ſeparated and managed as above directed.

HYDRANGEA, *Hydrangea.*

There is but one ſpecies, a ſhrubby deciduous plant, three or four feet high, for the ſhrubbery, having merit for the variety of its large ſimple foliage, and bunches of quinquepetalous flowers.

Claſs and order, *Decandria Digynia.*

*Characters.*] CALIX, is monophyllous, and five-parted at top. COROLLA, five roundiſh petals. STAMINA, ten filaments, alternately longer than each other, and roundiſh didymous antheræ. PISTILLUM, a roundiſh germen under the corolla, two ſhort ſtyles, and obtuſe ſtigmas. PERICARPIUM, a roundiſh didymous bilocular capſule, crowned by the permanent ſtyles, like two horns, and contains numerous ſmall angular ſeeds.

The ſpecies is;

*Hydrangea Arboreſcens.*] Hath a fibrous very ſpreading root; ſending up ſeveral ſhrubby, thick, pithy, perennial ſtalks, three or four feet high; garniſhed at each joint with largiſh, heart ſhaped, ſerrated, oppoſite leaves, on long foot-ſtalks; and large cymoſe bunches of white flowers at the top of the ſtalks.

It is a native of North America, is very hardy, and flowers here in July and Auguſt, but rarely produces good ſeeds in England.

The propagation of this ſpecies is very eaſy, for its ſpreading roots ſending up many ſtalks, they may be ſlipped off with great facility in autumn or ſpring, with roots to each, and may be planted in the ſhrubbery to remain, or in nurſery rows as may be convenient.

HYPERICUM, St. John's-Wort.

This genera furniſhes ſeveral hardy deciduous ſhrubs and underſhrubby plants for the ſhrubbery; and ſome tender ſhrubby exotics for the green houſe; all of them adorned with oblong and oval ſimple foliage, and pentapetalous yellow flowers in cluſters.

Claſs and order, *Polyadelphia Polyandria.*

*Characters.*] CALIX, is divided into five oval, permanent ſegments. COROLLA, five oblong oval ſpreading petals. STAMINA, numerous

numerous filaments, joined in ſeveral bodies and ſmall antheræ. PISTILLUM, a roundiſh germen, from one to three or five ſtyles, but moſt commonly three, and ſimple ſtigmas. PERICARPIUM, a roundiſh capſule, of as many cells as there are ſtyles, and numerous oblong ſeeds.

There are about ſix or ſeven ſpecies commonly retained in the Engliſh gardens as plants of ornament, four of them hardy, and three tender.

*Hardy Kinds.*

[1]HYPERICUM *Hircinum.*

*Stinking St. John's-Wort.*] Hypericum with ſeveral ſhrubby, two-edged ſtalks from the root, three or four feet high, branching by pairs oppoſite at every joint; oblong-oval, cloſe-ſitting, oppoſite leaves; and at the ends of all the young ſhoots, cluſters of yellow flowers, having the ſtamina longer than the petals, and three ſtyles.

The whole plant has a ſtrong diſagreeable odour.

*Varieties.*] Stinking St. John's wort, with ſtrong ſtalks, ſix or eight feet high, broad leaves, and large flowers——inodorous St. John's-wort, with ſtrong ſtalks, broad leaves, and without any diſagreeable odour——with variegated leaves.

All theſe varieties are ſhrubby, flower in June and July, in ſuch numerous cluſters, that the ſhrubs appear covered with them, and produce abundance of ſeed in autumn.

[2]HYPERICUM *Canarienſis.*

*Canary St. John's-Wort.*] Hath ſhrubby ſtalks, dividing and branching ſix or ſeven feet high, oblong, cloſe-ſitting leaves, by pairs; and at the ends of the branches, cluſters of yellow flowers, having the ſtamina longer than the corolla, and three ſtyles; flowering in June and July.

[3]HYPERICUM *Aſcyron.*

*Aſcyron, or Dwarf American St. John's-Wort.*] Hath very ſpreading roots, ſending up numerous, ſlender, four-ſquare ſtalks, a foot long; oval, ſpear-ſhaped, cloſe-ſitting, ſmooth leaves, by pairs oppoſite; and at the ends of the ſtalks, large yellow flowers, having five ſtyles.

[4]HYPERICUM *Androſæmum.*

*Androſæmum, commonly called Tutſan, or Park-leaves.*] Hath an upright under-ſhrubby ſtalk, two feet high, branching by pairs oppoſite; oval, heart-ſhaped, cloſe-ſitting leaves, by pairs; and from the tops of the ſtalks, cluſters of ſmall yellow flowers, having three ſtyles; and roundiſh berry-like black capſules; flowers in the end of July and Auguſt.

It grows naturally in woods in many parts of England, &c.

*Tender Green-houſe Kinds.*

[5]HYPERICUM *Balearicum.*

*Balearic warted-leaved Hypericum.*] Hath a ſhrubby ſtalk, branching two feet high, with reddiſh ſcarrified branches; ſmall, oval, waved, cloſe-ſitting, ſemi-amplexicaule leaves, warted underneath, and large yellow flowers, having five ſtyles; flowering great part of the year. Is a native of Majorca.

[6]HYPERICUM *Monogynum.*

*Monogynous, or One-ſtyled China Hypericum.*] Hath ſhrubby purpliſh ſtalks, about two feet high; oblong, ſtiff, ſmooth, cloſe-ſitting leaves, of a ſhining green above, and white underneath, and cluſters of ſmall yellow flowers, with coloured cups, and only one ſtyle; flowering moſt part of the year.

[7]HYPERICUM *Laſianthus.*

*Laſianthus, or Surinam Hypericum.*] Hath ſhrubby ſtalks, branching a yard high; ſpear-ſhaped ſerrated leaves, hoary underneath; and from the axillas of the ſtalks, yellow flowers, having five ſtyles. Is a native of Surinam and Carolina.

The flowers of all theſe ſpecies of Hypericum conſiſt each of five oblong oval petals, numerous ſtamina, and from one to five ſtyles (ſee the *Characters*); appearing principally in June, July, and Auguſt, and ſome moſt part of the year, in numerous cluſters, moſtly from the ends of the branches and young ſhoots, ſucceeded by oval capſules, containing plenty of ſeeds in autumn, eſpecially in the hardy kinds.

All the ſpecies demand attention as plants of ornament, having great merit in their flowers, appearing very conſpicuous in long ſucceſſion.

The hardy kinds are good furniture for all the ſhrubbery compartments, and will grow in any ſituation and expoſure, and in any common ſoil of a garden, will endure the ſevereſt cold, and greatly ornament the ſhrubbery in ſummer; more particularly the firſt and ſecond ſorts and varieties, which are more of a ſhrubby durable growth, than the other two hardy kinds; but all the ſorts merit culture to increaſe the variety. All of which are ſold cheap enough at the nurſeries, and may

may be eaſily increaſed by ſuckers, by ſlips of the root, and by ſeed. See their *Propation.*

The three tender ſpecies being natives of warm countries, muſt be potted to have ſhelter in winter in the green-houſe, and will effect a pretty variety among the other tender exotics.

*Propagation, &c. of all the Sorts.*

The firſt two hardy ſorts propagate very faſt by ſuckers, from the root, which are ſent up plentifully every year; and in autumn or ſpring may be readily ſlipped off from the old plants, with roots to each, or the whole plant may be taken up and divided into as many parts as there are ſuckers and ſlips with roots, planting the ſtrongeſt where they are to remain, and the weakeſt in nurſery rows for a year to acquire ſtrength.

They may alſo be propagated by ſeeds, ſowed in autumn in a bed of common earth, in drills an inch deep; the plants will riſe plentifully in ſpring, and be fit to tranſplant the ſpring following.

The other hardy ſorts are alſo eaſily propagated by ſlipping the roots in autumn, or early in ſpring; and may likewiſe be raiſed in great plenty by ſeeds as directed for the two former.

The three tender ſpecies are propagated by layers, and by cuttings. The laying is performed in ſpring on the young ſhoots, which will be well rooted by the end of ſummer; then plant each in ſeparate pots. And cuttings of the young ſhoots may be planted any time from March till June, in pots, and plunged in a hot-bed; they will readily emit roots and form plants.

The Monogynous Hypericum may likewiſe be propagated by ſlipping the roots in ſpring.

Theſe ſorts may alſo be raiſed from ſeed ſowed in ſpring, in pots, and plunged in a hot-bed, juſt to bring up the plants.

HYPERICUM *Frutex.* See SPIRÆA, it being a ſpecies of that genus.

HYSSOPUS, Hyſſop.

The Hyſſop of our gardens is a low undershrubby perennial, a fine aromatic, and medical plant.

Claſs and order, *Didynamia Gymnoſpermia.*

*Characters.*] CALIX, is monophyllous, oblong, five-parted, and permanent. COROLLA, is monopetalous and ringent, having the upper lip plane, roundiſh, emarginated and erect; the under one trifid, with the middle ſegment long and acute, and the ſide ones ſhort and obtuſe. STAMINA, two long and two ſhort filaments, and ſimple antheræ. PISTILLUM, a four-parted germen, ſlender ſtyle, and bifid ſtigma. PERICARPIUM, none, four oval ſeeds lodged in the calix.

There are three diſtinct ſpecies, but not more than one commonly cultivated, viz.

HYSSOPUS *Officinalis.*

*Officinal, or Common Hyſſop.*] Hath undershrubby, low, buſhy ſtalks, growing a foot and a half high; ſmall ſpear-ſhaped, cloſe-ſitting, oppoſite leaves, having ſeveral ſmaller riſing from the ſame joint; and all the ſtalks and branches terminated by erect, whorled ſpikes of flowers, of different colours in the varieties.

*Varieties.*] Common blue-flowered—white-flowered—red-flowered—long ſpiked with deep blue flowers—curled-leaved—ſtriped-leaved.

All theſe varieties are undershrubby, having ligneous durable ſtalks and branches, and all produce numerous ſmall flowers in whorls round the upper part of the ſtalks for a great length: each flower is of one petal, of the ringent or grinning kind.

They are very hardy plants, of great eſtimation as aromatics for medical purpoſes, and the common blue-flowered kind is the ſort chiefly uſed; and which is generally cultivated in the kitchen garden, ſometimes in cloſe rows, by way of edgings to beds or borders, clipping them annually to keep them regular and within due compaſs; ſee EDGINGS: and ſometimes are diſpoſed in beds, &c. in rows fifteen or eighteen inches aſunder, and the ſame diſtance between the plants in each row. The young ſhoots are the parts proper for uſe, and may be cut any time when wanted: obſerving, however, their ſeaſon of perfection for any general uſe, is in ſummer, when they are in flower; at which time the flower-ſtalks ſhould be cut down for uſe, and tied in bunches.

But all the varieties may alſo be employed to adorn the borders, and other parts of the pleaſure-garden, diſpoſing them here and there ſingly to form buſhy plants.

Their propagation is by ſeed, by ſlips, and by cuttings.

By Seed.—In March or April ſow the ſeed in a bed or border of light earth, and rake it

it in; and when the plants are come up, thin them, if too close, and when about three or four inches high, plant them out where they are to remain; or when it is designed to form an edging of them, the seed may be sown at once where the plants are to remain, in small drills, and covered half an inch deep.

By Slips and Cuttings.—In March, April, or May, slip or cut off a quantity of the robust side-shoots, plant them in a shady border, five or six inches apart; give water as soon as planted, repeat it occasionally, and they will soon strike root, and in autumn may be planted out where they are always to stand.

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# J.

JASMINUM, Jasmine, or Jessamine-tree.

The plants are of the shrub kind, mostly of somewhat trailing growth, consisting of three hardy deciduous flowering-shrubs for the open ground, and three tender ever-green flowering-shrubs for the green-house, adorned with pinnated and trifoliate leaves, and numerous monopetalous, tubular, five-parted flowers, which, in most of the species, are of admirable fragrance.

Class and order, *Diandria Monogynia*.

*Characters.*] CALIX, is monophyllous, tubulous, five-parted at the brim, and permanent. COROLLA, is monopetalous, with a long cylindric tube, and with the limb or upper part divided into five segments. STAMINA, two short filaments, and small antheræ. PISTILLUM, a roundish germen, slender style, and bifid stigma. PERICARPIUM, an oval bilocular berry, and two large oval seeds.

*Hardy Deciduous Kinds.*

[1]JASMINUM *Officinale.*

*Common White Jasmine.*] Jasminum, with shrubby, long, slender stalks and branches, rising upon support fifteen or twenty feet high; pinnated opposite leaves, of about three pair of sharp-pointed folioles, terminated by an odd one, running out to a long point, and numerous white flowers from the joints and ends of the branches; of a very fragrant odour.

*Varieties.*] With white striped leaves—yellow striped leaves.

All three varieties flower in great profusion most part of the summer; the flowers are universally white, and remarkable for their great fragrance; but are never succeeded by fruit in England.

[2]JASMINUM *Fruticans.*

*Shrubby Yellow Jasmine.*] Hath shrubby, angular, trailing stalks and branches, rising upon support eight or ten feet high; trifoliate and simple alternate leaves; and yellow flowers from the sides and ends of the young branches, appearing in June; frequently producing berries of a black colour.

This species is remarkable for sending up many suckers from its roots, often so plentifully as to over-spread the ground, if not taken up annually.

[3]JASMINUM *Humile.*

*Dwarf Yellow Jasmine.*] Hath shrubby firm stalks, and angular branches, of low, somewhat robust, bushy growth; broad trifoliate and pinnated leaves; and large yellow flowers in July, sometimes succeeded by berries.

The above three species are natives originally of distant countries; the first of India, the others of the southern parts of Europe, but are all hardy enough to grow here in the open ground, and have been many years inhabitants of our gardens.

*Tender Green-house Kinds.*

The following three species are natives of different parts of India, but succeed here with only protection from frost, and will sometimes live in the open air all the year, against

againſt a warm wall; it is, however, proper always to keep the principal part in pots to move to a green-houſe in winter.

[4]JASMINUM *Grandiflorum*

*Great-flowered Catalonian Jaſmine.*] Hath a ſhrubby, firm, upright ſtem, branching out into a ſpreading head, from about three to ſix or eight feet high; pinnated ever-green leaves, of three pair of pointed lobes, terminated by an odd one; and large flowers, of a bluſh red without, and white within; flowering from July till November.

*Variety.*] With ſemi-double flowers, having two ſeries of petals.

[5]JASMINUM *Azoricum.*

*Azorian White Jaſmine.*] Hath ſhrubby, long, ſlender ſtalks and branches, riſing upon ſupport fifteen or twenty feet high; trifoliate, oppoſite, ever-green leaves; and largiſh pure white flowers, in looſe bunches from the ends of the branches, appearing moſt part of ſummer and autumn.

[6]JASMINUM *Odoratiſſimum.*

*Odoriferous, or moſt Sweet-ſcented Yellow Indian Jaſmine.*] Hath a ſhrubby upright ſtalk, branching erectly without ſupport ſix or eight feet high, large trifoliate, ſhining, alternate, ever-green leaves, having oval lobes, and the middle lobe the largeſt; and bright yellow flowers in bunches from the ends of the branches; flowering from July till October, and emits a moſt fragrant odour.

Moſt of the above ſpecies of Jaſminum have long, ſlender, declinated branches, producing many very long, weak, green, pithy ſhoots annually, and from which the flowers are commonly produced.

The flowers of all the ſorts conſiſts of one petal, long and tubular below, and divided at top into five ſpreading ſegments. See the *Characters.*

*Culture of the Hardy Kinds.*

The three hardy kinds are proper furniture to adorn the pleaſure-garden; but their branches being moſtly long, ſlender, and of declinated growth, require ſupport, eſpecially the *Jaſminum Officinalis*, which is moſt commonly planted againſt walls and other fences, both for the convenience of training them, and to ornament the places, with their profuſion of flowers in ſummer. But this and the other two hardy kinds, may alſo be ſtationed in ſhrubberies, training them with upright ſingle ſtems, half a yard or a yard high, to ſtakes; and as they will branch out each way, by trimming the long ſtraggling ſhoots occaſionally every ſpring and ſummer, they may be made to form buſhy heads: thoſe planted againſt fences, ſhould be pruned down low at firſt, to force out lower lateral ſhoots, ſo as to furniſh every part from the bottom upward, and every year a due quantity of the ſtrongeſt ſhoots in every part are to be trained in, cloſe to the wall, &c. previouſly ſhortening them, more or leſs according to their ſtrength; but always cut low enough to take off the weak ſtraggling ſoft parts, and nail them in ſtraight, about four inches apart; and as, in ſummer, numerous ſhoots are ſent forth from all the branches, and that from the upper parts of the ſmaller ſhoots, the flowers generally ariſe; ſo that at this ſeaſon the rudeſt growing ſhoots may be reduced to a regularity, either by knife or garden-ſhears; obſerving, however, not to clip too cloſe, to cut off the parts that produce the flowers; but knife pruning is moſt eligible, by which you may train the whole always regular at the above diſtance, like a wall-tree; in ſummer, cutting out all the moſt irregular rambling ſhoots, and train a due quantity of the principal ones cloſe to the wall, to remain till winter or ſpring pruning; then ſelecting ſome of the ſtrongeſt in different parts to be trained as above hinted; at the ſame time cutting out all the ſuperabundant and weak ſhoots, cloſe to the old wood, ſo as to preſerve all the branches diſtinct at regular diſtances, in the manner of a wall-tree; being careful always to leave every year ſome of the ſtrongeſt young ſhoots at proper intervals, quite from the bottom to the top, to furniſh flowers in every part, and to ſupply the place of any decayed, or old naked wood, which ſhould be cut away occaſionally in the winter or ſpring pruning, and its place ſupplied with young ſhoots.

*Culture of the Tender Kinds.*

The three tender ſpecies requiring ſhelter of a green-houſe in winter, muſt always be kept in pots, to move them in and out occaſionally; let them be potted in rich light earth, frequently watered in ſummer, and about once a week in winter, but always moderately during that ſeaſon; prune off all decayed wood, at any time when it appears; and ſhorten, or retrench the rambling ſhoots as you ſhall ſee occaſion, to preſerve the heads ſomewhat regular, managing them in other reſpects as directed for other green-houſe ſhrubs. See GREEN-HOUSE PLANTS.

A plant or two of each of theſe tender ſpecies may alſo be planted againſt a warm wall, trained thereto, and left to take their chance, with only occaſional ſhelter of mats in froſty weather.

*Propagation of all the Sorts.*

The three hardy ſorts are eaſily propagated in great plenty by layers and cuttings. Lay a quantity of the ſtrong young ſhoots in autumn, winter, or ſpring, trimming their tops, and they will be well rooted by autumn following: at the ſame ſeaſons cuttings of the ſtrong ſhoots, in lengths of ten or twelve inches, planted in a ſhady border, will be rooted and fit to tranſplant by next autumn. The *Jaſminum Fruticum* may alſo be propagated by ſuckers, which it ſends up in great plenty, and theſe being taken off will make good plants.

The ſtriped varieties of the firſt ſpecies are alſo propagated by grafting or budding in ſtocks of the common kind.

The three tender ſpecies may alſo be encreaſed by layers in March: chuſing the young wood, make a ſlit at a joint in each layer, where they are to be layed, and lay them in the uſual way; give plenty of water all ſummer: they will be properly rooted by autumn, when each layer is to be ſeparated from the parent, and planted ſingly in pots, and placed among the other green-houſe exotics.

Theſe three kinds are alſo very commonly propagated by grafting, and budding them upon the common white, and ſhrubby yellow Jaſmine.

They are alſo raiſed from ſeeds, more particularly the Azorian Jaſmine, and *Jaſminum Odoratiſſimum*. Sow the ſeed in March or April, in pots of light rich earth, an inch deep, and plunge the pots in the earth of a moderate hot-bed under frame and glaſſes; refreſh them with frequent ſprinklings of water, and the plants will riſe in five or ſix weeks, or in a little more or leſs time, when freſh air muſt be admitted daily, by tilting the lights, giving alſo frequent waterings; and towards the middle or latter end of May, begin to inure them to the full air, and remove them into it fully in June, to remain till October, then moved into the green-houſe for the winter; and in March or April following, tranſplant them into ſeparate ſmall pots, and managed as other green-houſe ſhrubs.

JATROPHA, Caſſada, or Caſſava-plant, &c.

This genus furniſhes ſhrubby, elegant, flowery perennials, natives of the warm parts of America, and retained here in hot-houſes for variety; growing with durable ſtems and branches, erect, from about a yard to eight or ten feet high; adorned with divided palmated leaves; and monoecious, monopetalous hypocrateriforme males, and quinquepetalous female flowers.

Claſs and order, *Monoecia Monadelphia.*

*Characters.*] CALIX, monoecious flowers, having a very ſmall cup to the males, and none to the females. COROLLA, is, in the males, monopetalous, hypocrateriforme, five-parted and ſpreading; and, in the females, conſiſts of five roſe-like petals. STAMINA, in the males, ten erect united filaments, five of them alternately ſhorter, and roundiſh verſatile antheræ. PISTILLUM, a roundiſh triſulcated germen, three forked ſtyles, and ſimple ſtigmas. PERICARPIUM, a roundiſh, trilocular, tricoecous capſule, and three roundiſh ſeeds.

There are ſeveral ſpecies, of which the following are thoſe generally retained here in our hot-houſes.

1 JATROPHA *Manihot.*

*Manihot, or eſculent Jatropha, commonly called Caſſada, or Caſſava.*] Jatropha, with a thick fleſhy root; an upright, thick, woody, pithy ſtalk, riſing ſix or ſeven feet high; palmated leaves, of ſeven ſpear-ſhaped, ſmooth, entire lobes, five or ſix inches long, all uniting at their baſe, and ſpread out like an expanded hand; and male and female yellow flowers in umbels at the top of the ſtalk and branches, ſucceeded by three-furrowed capſules containing the ſeeds.

The root of this ſhrub, though of a poiſonous quality, ſerves for bread to moſt of the inhabitants of the Weſt-Indies, being firſt diveſted of its poiſonous juice by expreſſion; it is prepared by rubbing the root forcibly upon a ſtrong copper grater, till reduced to a rough ſaw-duſt-like powder, or meal, is then put into a preſs, to ſqueeze out the poiſonous juice; and being ſufficiently preſſed and ſifted, is made into bread, by ſpreading it two or three inches thick, upon an iron plate heated over a fire, and thus the parts join, incorporate, and become cake bread, which is accounted very nouriſhing; and if the meal is put into ſoup, it ſwells up conſider-

ably,

ably, which ſeems to prove its great abundance in ſubſtance.

Great quantities of this ſort are cultivated in all the Weſt-India iſlands for the above purpoſes.

[2]JATROPHA *Urens.*

*Stinging Jatropha*] Jatropha with a thick fleſhy root; an upright, ligneous, prickly, pithy ſtalk and branches, riſing five or ſix feet high; palmated leaves, of five ſinuated lobes, armed with ſtinging ſpines; and white flowers in umbels from the ends of branches.

[3]JATROPHA *Goſſypifolia.*

*Goſſypium-leaved Jatropha.*] Hath a woody, branchy ſtalk, riſing four or five feet high, ſet with cluſters of briſtly hairs; leaves divided into oval, entire lobes; and dark purple flowers growing in umbels at the ends of the branches.

JATROPHA *Multifida.*

*Multifid Jatropha.*] Hath a thick, woody, pithy ſtalk, branching eight or ten feet high; large many-lobed leaves, having the lobes multifid or jagged into many points; and bright ſcarlet flowers, growing in umbels at the ends of the branches.

All theſe ſpecies of Jatropha are durable in root, ſtalk, and branches; the ſtalks are woody, generally very thick, ſomewhat ſucculent, and full of a white pith and milky juice; the leaves very large and elegant; and the flowers produced in large umbels, having male and female in the ſame umbel; the males are of one ſalver-ſhaped petal, and the females are of five petals, expanding in form of a ſingle roſe; they flower here annually in ſummer, and are frequently ſucceeded by ripe ſeeds, which are contained in roundiſh three-lobed capſules of three cells, having one ſeed in each cell.

As all the ſorts are natives of the warmeſt parts of the world, they require a hot-houſe to preſerve them in this country, ſo muſt be potted in pots of good light-earth, and always continued in the ſtove, where they will exhibit a fine variety with their large elegant foliage, and umbellate flowers.

They ſhould be always but moderately watered, eſpecially in winter, for being moſtly replete with a milky juice, much moiſture might rot them.

Their propagation may be performed by ſeed, and cuttings.

By Seed.—The ſeed frequently ripens here, and is alſo imported annually from America, which ſhould be ſowed in ſpring, in pots of rich light earth, and plunged in the bark-bed, where the plants will ſoon come up; and when a few inches high, prick them in ſeparate ſmall pots, give a little water, and plunge them alſo in the bark-bed.

By Cuttings.—In ſpring or ſummer, cuttings of the ſtalks and branches, ſix or eight inches long, planted in pots, and plunged in the bark-bed, will put out roots, and become proper plants. This is the common method of propagating the firſt ſort in America for food.

IBERIS, Candy-tuft, or Sciatica Creſs.

This genus comprehends hardy, herbaceous, low, flowery annuals for the borders, and under-ſhrubby perennials for the green-houſe; all of them of branchy buſhy growth, from about ſix or eight inches to a foot and a half high; garniſhed with narrow entire leaves, and terminated by umbels of tetrapetalous flowers.

Claſs and order, *Tetradynamia Siliculoſa.*

*Characters.*] CALIX, four ſmall oval deciduous leaves. COROLLA, four oval, ſpreading, unequal petals, the two outer ones longeſt. STAMINA, four long and two ſhort filaments, and roundiſh antheræ. PISTILLUM, a roundiſh compreſſed germen, ſhort ſtyle, and obtuſe ſtigma. PERICARPIUM, a roundiſh compreſſed bilocular capſule, and two oval ſeeds.

The ſpecies cultivated in our gardens are, two hardy herbaceous annuals, and two or three tender ſhrubby perennials.

*Hardy Herbaceous Annual Kinds.*

[1]IBERIS *Umbellata.*

*Umbellated Iberis, or Common Candy-Tuft.*] Iberis, with herbaceous, ſhort, round, very branchy ſtalks, of tufty growth, from about ſix to eight or ten inches high; ſmall ſpear-ſhaped leaves, the lower ones ſerrated, the upper entire; and all the ſtalks and branches terminated by umbellate cluſters of flowers of different colours in the varieties.

*Varieties.*] With white flowers—with red flowers—and with purple flowers.

All the varieties flower in June, and by different ſowings may be made to flower to the end of ſummer; they were introduced to our gardens from Candia.

[2]IBERIS *amara.*

*Bitter Candy-Tuft.*] Hath herbaceous, ſhort, round, very branchy ſtalks, of buſhy growth, from about eight to ten or

twelve inches high; ſmall, ſpear-ſhaped, ſlightly-indented leaves; and all the branches terminated by racemoſe bunches of white flowers in June and July, &c.

Both theſe ſpecies and varieties are very hardy annual flowers, riſe freely in the open ground, ſhould generally be ſowed in patches, and by different ſowings from March till Midſummer, they will afford a ſucceſſion of bloom from June till September, and produce great plenty of ſeeds.

*Shrubby Perennial Kinds for the Green-houſe.*

The two following low under-ſhrubby ſpecies being natives of Candia, and other warm parts, require ſhelter of a green-houſe here in winter.

3 IBERIS *Sempervirens.*

*Ever-green Shrubby Iberis, commonly called Tree Candy-Tuft.*] Hath low under-ſhrubby ſtalks, very branchy and buſhy, growing but ten or twelve inches high; very narrow acute entire leaves, remaining all the year; and white flowers in umbels at the ends of the branches, appearing great part of the ſummer.

* IBERIS *Semperflorens.*

*Ever-flowering Shrubby Iberis.*] Hath low under ſhrubby ſtalks, very branchy, ſpreading and buſhy, growing a foot and a half high; wedge-ſhaped, obtuſe, entire, ever-green leaves; and white flowers in umbels, at the ends of the branches, appearing at all times of the year.

*Variety.*] With white ſtriped leaves.

The flowers of all theſe plants conſiſt each of four ſmall petals, are very numerous, terminating all the branches in umbellate cluſters, ſo conſpicuouſly, that the plants appear covered therewith; ſucceeded by abundance of ſeed in the annual ſorts; but the ſhrubby kinds rarely produce any here.

The two annual ſpecies make a pretty appearance when diſpoſed in patches in the flower-borders, ſowed in ſpring where they are finally to remain; but as they continue only two or three weeks in beauty, it is proper to perform three or four different ſowings from Feb. or March until June, to have a ſucceſſion of bloom to the end of ſummer. Sow about half a thimbleful of ſeed in each patch of about five or ſix inches diameter, covering them with fine earth, near half an inch deep; and when the plants are an inch high, thin them to about ſix in each patch, that they may have room to branch and ſpread, where by they will flower ſtronger, and continue longer in bloom, than if left thick.

The two ſhrubby perennial kinds, are naturally of low buſhy growth, durable in root, ſtem, and branches, ever-green, and very floriferous, and merit admittance in every green-houſe collection, both as ever-greens, and for the beauty of their flowers almoſt throughout the year. They being impatient of froſt, muſt be potted to move to ſhelter in winter; potting them in any good light earth, and place them in a green-houſe or garden-frame in winter. A few plants of each may alſo be planted in the full ground, in a dry ſheltered ſunny ſituation to take their chance, and will frequently ſtand tolerably well the year round, with only a light covering of long ſtrawey litter in hard froſts.

The propagation of theſe two ſhrubby kinds and variety, is eaſily effected by ſlips and cuttings, from three to five or ſix inches long, planted any time from March till July, either in a hot bed or natural earth, affording them ſhade and water, and they will readily put out roots, and be fit for potting towards the end of ſummer.

ICE-HOUSE, a building ſunk in the ground, ſerving as a repoſitory to preſerve Ice till ſummer, for various family-uſes; the management of which generally belongs to the gardener.

This building is conſtructed like a well, moſtly ſunk in the ground as above obſerved, eight, ten, or twelve feet deep, walled with brick or ſtone, arched over at top, having a ſmall door on the north-ſide, and over all a ſlated or thatched roof. The place for this building ſhould be generally in ſome bye part of the garden, or ſome convenient place contiguous thereto: chuſing a dry elevated ſituation, both that the Ice may not be liable to be melted by copious moiſture, and that all moiſture running from the Ice may readily drain off. It would be of much advantage if it could be contrived on or near the ſide of ſome hill, or ſloping ground, where the baſe of the ſlope is lower than the bottom of the well of the building, for the more effectually draining off the moiſture; let it, however, be contrived in as dry a place as poſſible, and ſo much elevated as the water may be eaſily carried off by drains to ſome lower ground; and ſhould be in a part either within, or contiguous to the garden, where carts can readily bring in the Ice in winter.

The

The place being fixed on, a well muſt be digged, eight or ten feet diameter, and as much in depth, or more; obſerving, if the ſituation fixed on is ſomewhat elevated, and the ground of a dry gravelly, or ſandy nature, not retentive of moiſture, the pit or well may be wholly ſunk below the general ſurface; but if rather low, or moiſt ground, it is adviſable to have the well raiſed as much above the ſurface as the moiſture may eaſily drain away. Having formed the cavity or pit of the well, then at bottom ſhould be formed a hollow ſpace for a drain, two feet deep, the ſides walled with brick or ſtone, having at top a grate framed with ſtrong wooden bars; from the bottom of this drain muſt be a ſmall under-ground drain, to conduct the moiſture quite away from the building. The ſides of the main well muſt be walled round with brick or ſtone, two feet thick at leaſt, and carried up to a proper height, leaving, near the top, on the north ſide, a ſpace two feet and a half diameter, for the admiſſion of the Ice, &c. and terminate the wall all round with a ſtrong thick arch of the ſame materials carried over the top; and there ſhould be another wall proceeding from within three feet below the top of the other, raiſing it alſo with an arch over the top of the firſt, leaving likewiſe a place for entrance; or, if this outer wall is not arched, raiſe upon it a wooden roof ſlated, tyled, or thickly thatched; obſerving if ſlated or tyled, a foot thickneſs of reeds or ſtraw under it is proper, the better to exclude all air and heat of the ſun; and from the door or mouth of the well, ſhould be a porch continued a yard and a half outward, and one or two wide, walled on the ſides, and arched at top, and a door at the outer end; and both the inner and outer doors made to ſhut perfectly cloſe. The building thus far advanced, may then bank up earth around the out-ſide wall, the better to defend the Ice from all external cauſes, and finiſh with a coat of turf laid neatly all over the banking.

If the building is finiſhed betimes in the ſummer, it will be dried enough for the reception of the Ice the following winter.

Therefore in winter take the opportunity of the firſt Ice, when about an inch or two thick; load it in carts, and bring it to the Ice houſe, ſhooting it down at the outer door; then, after having laid ſome clean ſtraw, reeds or faggots of bruſh wood at the bottom of the well upon the wooden grate, caſt in the Ice, breaking it ſmall, and ramming it cloſe from time to time, that it may cement into one ſolid maſs; obſerving, as you proceed, to lay ſome clean ſtraw all round next the wall if poſſible, to preſerve a vacancy to give paſſage to any moiſture that may proceed from the top of the Ice.

As ſoon as the well is thus filled with Ice, ſhut the inner door, which ſhould be thick, cloſe, and made to fit exactly; then let all the vacant ſpace between that and the outer door be cloſely filled with ſtraw, and then ſhut the outer door as cloſe as poſſible.

Thus the Ice will be preſerved till ſummer; and if the houſe is perfectly air and moiſture tight, will keep two or three years.

When the ice is to be taken out for uſe, be careful, in going in, always to ſhut the outer door before the inner one is opened; and as the ice will be all incorporated to a ſolid lump, you muſt have an iron inſtrument always in readineſs to break it up, taking out no more at a time than is wanted.

ILEX, (formerly *Aquifolium*) the Holly-tree.

This genus furniſhes hardy ever-green trees of great beauty and value, being proper both for uſeful and ornamental plantations; obtain twenty or thirty feet ſtature, adorned with long ſpinous, and ſerrated ever-green leaves, and ſhort cluſters of monopetalous four-parted flowers, ſucceeded by bunches of beautiful red berries in autumn and winter.

Claſs and order, *Tetrandia Tetragynia.*

*Characters.*] CALIX, is ſmall, indented in four parts, and permanent. COROLLA, is monopetalous, and deeply divided into four roundiſh ſegments. STAMINA, four ſhort filaments, and ſmall antheræ. PISTILLUM, a roundiſh germen, no ſtyle, but four obtuſe ſtigmas. PERICARPIUM, a roundiſh quadrilocular berry, and four oblong hard ſeeds.

There are but two ſpecies of *Ilex* common to the Engliſh gardens:—the common Holly—and Dahoon Holly; but of the former are many fine varieties.

The ſpecies are;

1 ILEX *Aquifolium.*

*Aquifolium, or Common Holly-tree.*] Hath an upright trunk, branching all around, twenty or thirty feet high, in a conic form; oval, waved, ſtiff, alternate leaves, having the edges and extremity terminated by ſharp ſpines, pointing ſome upward, and ſome downward; and from the ſides of the branches

branches, ſmall whitiſh flowers in ſhort cluſters, appearing in May; ſucceeded by bunches of roundiſh berries, ripening to a beautiful red colour in autumn and winter. Is a native of woods and foreſts in England.

Of this ſpecies are many curious varieties, both with entire green leaves, and with variegated, but the variegated kinds are the moſt extenſive.

*Green-leaved Varieties.*] Common green-leaved, prickly Holly—ſmooth green Holly, the leaves being deſtitute of ſpines—narrow, ſerrated-leaved green Holly—green-leaved, yellow-berried Holly—box-leaved green Holly—hedge-hog green Holly, having the ſurface of the leaves cloſely ſet with ſmall prickles, reſembling thoſe of a hedge-hog; hence it derived the name, (*Ilex Echinata.*)

*Variegated ſorts.*] Common prickly Holly, with ſilver-ſtriped leaves——with gold-ſtriped leaves—with bloatched leaves—ſmooth Holly with white-ſtriped leaves——yellow-ſtriped leaves—with bloatched leaves—narrow ſtriped-leaved Holly—bloatched-leaved, yellow-berried Holly—cream-coloured Holly—copper-coloured Holly—white-leaved Holly—mottled Holly—hedge-hog ſilver-edged Holly—gold-edged hedge-hog Holly—white bloatched hedge-hog Holly—yellow bloatched hedge-hog Holly—painted lady variegated Holly.

There are many other varieties of the variegated Holly, differing a little in the ſize, form, and variegation of the leaves, and are retained in moſt of the nurſeries, and named in their catalogues, often by that of the perſons who raiſed them, or any name according to their fancy; but the ſorts above mentioned being the principal varieties, moſt of the others belong to one or other of them.

All the varieties, both green and variegated kinds, are hardy ever-greens, of the tree and ſhrub kind, branching out every way from the bottom upward, and are finely adapted for all ornamental plantations; the common green ſort alſo as a foreſt tree.

[2]ILEX *Caſſine.*

*Caſſinoide Ilex, commonly called Dahoon Holly, ſuppoſed allied to the Caſſine.*] Hath an upright branching ſtem, riſing fifteen or twenty feet high; oval lanceolate, ſerrated leaves, placed alternate; and ſmall white flowers, in ſhort thick cluſters from the ſides of the branches; ſucceeded by red berries, but rarely any in England. Is a native of Carolina.

Both theſe ſpecies of *Ilex*, together with all the varieties, are of the tree and ſhrub kind, and ever-green, being cloſely garniſhed with leaves all the year; and all the varieties of the *Ilex Aquifolium*, or common Holly, are extremely hardy, as well as very beautiful ever-greens, will proſper in any common ſoil and expoſure; but the Dahoon Holly is rather tender, being ſubject to injury from ſevere froſt, eſpecially when young; after, however, having occaſional ſhelter two or three years, of a frame, &c. in winter from hard froſt, and being gradually hardened, it will bear our ordinary winter very well, in a dry ſoil and ſheltered ſituation.

All the ſorts are fine furniture for every ornamental plantation: nothing can make a finer appearance than a collection of the ſeveral varieties of the firſt ſpecies, ſuffered to take their own natural growth; they being beautiful all the year, but appear rather with greater elegance in winter than ſummer; and the variegated kinds being interſperſed in the ſhrubbery, clumps, and other ornamental plantations, in aſſemblage with other hardy ever-greens, their beautiful variegations, with others of different hues, will greatly heighten the contraſt; and their numerous cluſters of red berries will add conſiderably to their luſtre in the autumn and winter ſeaſons. The Dahoon Holly is alſo a very fine plant, and worthy of admittance in every collection of ever-greens.

The firſt ſpecies was alſo in univerſal eſtimation for forming garden-hedges, both for ornament, and as fences, and makes the moſt beautiful hedge in the world. See HEDGES.

It was likewiſe greatly uſed to plant as detached or ſingle objects to train into regular figures, as globes, hemiſpheres, pyramids, &c.

And is likewiſe conſidered as a foreſt-tree, as its trunk will acquire a conſiderable bulk, where the trees are ſuffered to grow up, as in the places of their natural growth, in many of our foreſts and woods. The wood of it being very white and hard, is valuable for many purpoſes in the turnery and cabinet work; for as it takes a fine poliſh, is very proper for ſeveral kinds of houſhold furniture, inlayings, &c. hones for razors are made of this wood, and is fit for many other ſmall hard uſes.

Of the bark of this tree is made the compoſition called bird-lime. The bark being peeled

peeled about Midſummer, and put into a veſſel of ſpring-water, and boiled about twelve hours, when the white bark will ſeparate from the green; then lay the green bark on the floor of ſome cool cellar, covering it with any freſh rank weeds, and when lain a fortnight, pound it in a mortar till it becomes a tough paſte; this done, waſh it well in ſeveral waters till quite clean; put it then into an earthen veſſel, to ferment and purge four or five days, ſcumming off all filth that ariſes; then change it into a freſh veſſel for uſe; taking any quantity required, adding thereto a third part of well clarified gooſe or capon greaſe, mixing them well over a moderate fire, by conſtant ſtirring till cold, and the compoſition is prepared.

*Propagation, &c.*

The propagation of theſe trees is by ſeed, and by grafting and budding.

The common green Holly is raiſed plentifully from ſeed in the open ground; and all its varieties by grafting and budding upon ſtocks of that ſort, raiſed as above from the berries: for ſow the berries of any of the varieties, and they rarely produce any but plants of the common green kinds; ſo that there is no other certain method of continuing the variegated ſorts, in particular, than grafting or inoculating ſhoots, or buds of them into common Holly ſtocks. The hedge-hog-Holly berries, however, very commonly produce plants of the ſame ſort, with green leaves; but the variegated kinds thereof are continued by grafting or budding, &c. as obſerved for the other variegated kinds, &c.

By Seed.—The berries ripen in October and November, when a due quantity is to be gathered from any of the varieties; then obſerving, that as thoſe ſeeds generally lie two years before they germinate, they may either be buried in a heap in a hole or pit for a year, to be preparing for vegetation, then taken up and ſowed; or may be ſowed at once as ſoon as gathered, as hereafter directed, and they will come up the ſpring-twelvemonth following. But as theſe ſeeds, like the haws of the hawthorn, &c. never grow till the ſecond ſecond ſpring, as juſt obſerved, it is common to bury them a year; that is, in ſome dry part of the garden, dig a hole or trench a ſpade deep, or a little more, and one or two wide, or in proportion to the quantity of berries; which directly put into the hole or trench, and cover them over with ſome of the earth, five or ſix inches deep; or they may be buried in a large pot or tub, plunged over the top in the ground: in either method let them remain till next October; then having ground dug, and divided into four-feet-wide beds, with alleys between, trim with the rake or ſpade, an inch depth of earth evenly off the top of the bed; this done, take up the berries, and ſow them evenly on the bed, beat them down gently with the back of the ſpade, and cover them with the earth an inch deep, and lightly ſmooth the ſurface: or the berries may be ſowed in drills the above depth, making the drills ſix inches aſunder: the berries thus ſowed after being buried in the ground one year, will moſtly come up the ſpring following.

I, however, have obſerved, that the berries ſowed at once in the beds, as above, an inch deep, keeping the beds well weeded the following ſummer, that the berries all lying near the ſurface an equal depth, will all along enjoy an equal benefit of the air, ſun, and ſhowers, ſo as in the ſecond ſpring they generally riſe rather more regular and ſtrong than thoſe that were buried.

When the plants come up, keep them well hand-weeded, and if very dry weather, ſome water once a week will be of much ſervice.

Two years let them remain in the ſeed-bed, then in ſpring plant them out in nurſery-rows, two feet aſunder, and a foot diſtance in each row, there to remain until they are of proper ſize to be finally tranſplanted; and the proper ſeaſon for this is any time from the middle of September till that of March.

By Grafting and Budding.—All the varieties are, as above mentioned, continued by grafting or budding; and by either of which modes of propagation they may be multiplied at pleaſure, upon ſtocks of the common Holly, raiſed from ſeed, as above directed, which after being planted out in nurſery-rows, one or two years, they will be of proper ſize to graft or bud upon. The grafting is performed in March, by whip-grafting in the uſual way; and the budding to be performed in July or Auguſt, according alſo to the uſual method. See GRAFTING and INOCULATION.

The Dahoon Holly is alſo raiſed from ſeeds like the common kinds. The ſeeds are brought

brought annually from America, which, as ſoon as they arrive, ſhould be either buried in the ground like the common Holly for a year, or may be ſowed at once in pots of light ſandy earth, and plunged to their rims in dry earth about a twelvemonth: then, in ſpring following, if plunged in a hot-bed will greatly facilitate their growth, being careful to inure the plants to the full air; afterwards plunge the pots in a ſhady border till October, then remove them under a hot-bed frame for the winter; in ſpring thin them out, and plant them in ſeparate pots, to have occaſional ſhelter of a frame for two or three winters, then tranſplanted in ſpring into the full ground.

IMPATIENS, Touch-me-not, and Balſamine, or Balſam.

This genus furniſhes beautiful flowery annuals, of upright growth, branching a foot and a half, or two feet high; adorned with oval and ſpear-ſhaped leaves; and quinquepetalous irregular flowers.

Claſs and order, *Syngeneſia Monogamia.*

*Characters.*] CALIX, is two-leaved, coloured, and placed on the ſide of the corolla. COROLLA, is ringent, of five roundiſh unequal petals, and a one-leaved, hood-ſhaped nectarium at bottom, terminating at the baſe in a ſpur or tail. STAMINA, five ſhort incurved filaments, having the tops of the antheræ joined. PISTILLUM, an oval germen, no ſtyle, but a ſhort ſimple ſtigma. PERICARPIUM, an unilocular capſule, opening with elaſticity in five twiſted, ſpiral valves, and roundiſh ſeeds, fixed to the columnar receptacle.

This genus derives the name *Impatiens* from the elaſtic property of its ſeed-veſſel, which, when ripe, is ſo impatient of the touch, as to burſt open with elaſticity, and dart its ſeeds from their department with great velocity, eſpecially the firſt ſpecies. There are only two ſpecies of this genera uſually cultivated in the Engliſh gardens, both annuals; one is the *Noli me tangere*, or Touch-me-not, eſteemed more for the ſingularity of it's elaſtic capſules than beauty of its flowers: the other is that noted annual, Balſamine, or Balſam, comprehending, on ſeveral elegant varieties, producing numerous fine large flowers of ſingular beauty.

The ſpecies are;

[1]IMPATIENS, *Noli me tangere.*

*Noli me tangere, Touch-me-not, or Common Yellow Balſamine.*] Hath fibrey roots; an upright, jointed, ſucculent ſtalk, a foot and a half high; oval alternate leaves; and from the axillas of the ſtalks, long, ſlender, branching foot-ſtalks, each ſuſtaining many yellow flowers; ſucceeded by taper capſules, that burſts open, and dart out their ſeeds with elaſtic force.

It grows wild in England, but is cultivated in many gardens for curioſity.

[2]IMPATIENS *Balſamina.*

*Balſamina, or Balſamine, commonly called Balſam.*] Hath a fibrey root; an upright, thick, ſucculent ſtalk, branching all around, a foot and a half or two feet high; long, ſpear-ſhaped ſawed leaves, the upper ones alternate; and from the joints of the ſtalk and branches cluſters of ſhort foot-ſtalks, each ſuſtaining one large irregular flower, of different colours in the varieties; flowering from June or July till September.

*Varieties of this are.*] Balſamine with ſingle and double red flowers—ſingle and double white flowers—ſingle and double purple flowers—variegated ſingle and double flowers—large, double, variegated, ſcarlet and white flowers—large, double, variegated, purple and white flowers, &c. all of which are moſt beautiful annuals, but being originally of Indian growth, are ſomewhat tender, requiring moſtly to be raiſed and forwarded in hot-beds, &c.

Both the ſpecies and reſpective varieties are proper to be employed as plants of ornament to adorn the pleaſure-garden; but the ſecond ſort, *Balſamina*, and varieties, are conſiderably the moſt beautiful, excelling alſo moſt others of the annual tribe. The flowers of both the ſpecies are moderately large, and conſiſt each of five roundiſh unequal petals, and a monopetalous, hood-ſhaped nectarium, ending in a tail; the whole corolla is irregular, and ſomewhat reſembling the ringent, or grinning flowers (ſee COROLLA *Ringens*); and are ſucceeded by plenty of ſeed in autumn, by which all the ſorts are raiſed annually; the firſt ſort in the common ground in autumn or ſpring; and the ſecond chiefly in hot-beds in March and April. See their *Propagation*, &c.

The firſt ſpecies, *Impatiens noli me tangere*, being an indigenous plant of England, is very hardy; and is worth cultivation in gardens, both for the variety of its flowers, and the curioſity of its elaſtic ſeed-veſſels, &c. will grow freely in the open borders, by ſeed in autumn or ſpring, ſowed either where the plants are to remain, or for tranſplantation.

The

The *Impatiens Balſamina*, or Balſamine, is one of the fineſt annual flowers of our gardens; but being a native of India, is tender, not able to bear the open air here before May or June, and requires to be raiſed principally in a hot-bed in ſpring, under frames, &c. until June, as aforeſaid; remarking, however, that the ſeeds will alſo grow in the natural ground in May, rarely before, and more freely then, if covered with a hand-glaſs, &c. but the plants ſo raiſed will not begin to flower ſo ſoon by five or ſix weeks, as thoſe forwarded by artificial heat, under frames and glaſſes. All the varieties are of ſomewhat luxuriant growth, they frequently having ſtems thicker than good walking-canes, branching out into large heads, and every branch productive of abundance of flowers; and as the branches advance in length, furniſh a ſucceſſion of bloom for two or three months; obſerving that the variegated doubles have the greateſt merit, which are ſometimes as large as middling roſes, and the petals multiplied in many ſeries; and all the varieties produce ſeed plentifully in autumn.

The fine varieties of this elegant ſpecies, are commonly planted in pots to decorate fore-courts, and other conſpicuous departments; and the more inferior varieties are generally diſpoſed in the common borders, as all the varieties, after being raiſed as above hinted, until June, will grow freely in the open ground, the remainder of the ſummer.

*Propagation and Culture, &c.*

The propagation of both the ſpecies, and varieties in general, is by ſeed; remarking, that the plants being but of one ſummer's duration, the ſowings muſt be performed annually.

The *Noli me tangere* may be ſowed in autumn, i. e. September, October, or November, or early in ſpring, February or March, in any bed or border, either in patches where the plants are to remain, or for tranſplantation, half an inch deep; and when the plants are come up an inch or two high, thin them to three in each patch; obſerving the ſame if they are to be tranſplanted. From the ſcattered or ſelf-ſown ſeeds of this ſpecies in autumn, many young plants will riſe naturally the following ſpring.

The *Balſamine* is always ſowed in the ſpring, in March or April, and ſhould be performed principally in a hot-bed, as before obſerved; and the plants continued therein till June, and if under deep frames may be drawn up two or three feet high by the latter end of that month.

Particular attention is requiſite to procure ſeeds of the fine variegated doubles, eſpecially if intended to exhibit a grand ſhew of them in pots, or principal borders and flower-beds. Sow the ſeed either in pots of light rich earth, half an inch deep, plunging the pots in a hot-bed; or it may be ſowed immediately in the earth of the bed in ſmall drills the above depth: the plants will ſoon appear, which are to be managed as other annuals of ſimilar temperature, with reſpect to giving air daily, and frequent moderate waterings. When they are two or three inches high, it it is proper to prick them out, either in the ſame, or in a freſh hot-bed, under a proper frame; raiſing them up with the roots entire, and either plant ſome of the beſt in pots (thirty-twos), one plant in each, up to their ſeed leaves, and plunge the pots in the hot-bed, as obſerved for the ſeed, or plant them into the earth of the bed, four or five inches aſunder: in either method give a moderate watering directly, and occaſional ſhade from the mid-day ſun till they are freſh rooted; repeating the watering frequently. After having grown here about a month, they will be ſo much advanced in growth as to interfere with each other, when thoſe in pots may be turned out with the earth about their roots into larger pots (twenty-fours), to remain; which if plunged alſo in the hot-bed will greatly forward the plants. Thoſe planted in the earth of the hot-bed, if any of them are deſigned for pots, ſhould alſo be then taken up with balls and potted, and treated as above, giving water and occaſional ſhade as before. As they all advance in growth, raiſe the frame, if neceſſary, that they may grow to their full height; for it is a principal property to have theſe plants of ſome conſiderable ſtature. See ANNUAL PLANTS.

They muſt remain conſtantly in the frame till June, then harden them gradually to the full air, ſo as they may be removed into it fully towards the middle or latter end of that month, according to their ſize, and temperature of the ſeaſon; at which time alſo thoſe deſigned for the borders ſhould be tranſplanted therein with balls of earth about their roots, giving water at planting, repeating it daily, or as there ſhall ſeem occaſion, till they have taken good root.

As ſoon as they are removed into the open air, both thoſe in pots and in the full ground ſhould have a tall ſtick placed to each for ſupport, to which tie their ſtems neatly.

Let thoſe in pots be often watered in dry weather; once or twice a day in very hot weather will be neceſſary.

All the varieties of Balſamine may be raiſed to a great perfection in a ſtove, with little trouble, at almoſt any time of the year; ſowing the ſeeds in pots, and plunge them in the bark-bed, and when the plants are two inches high, plant them in ſeparate pots, which plunge alſo into the bark-bed, to remain until the plants are grown up.

But in default of hot-beds, &c. theſe plants may alſo be raiſed in the common ground for an autumnal bloom: the ſeeds will not, however, ſucceed in the natural earth before May, and even then muſt be ſowed in a warm dry border, or in pots placed in a warm ſituation, and if covered with hand glaſſes occaſionally will be an advantage, though they will often come up without any ſhelter at all, and flower abundantly in Auguſt and September; ſometimes too, ſeeds having ſcattered or ſowed themſelves the year before in the borders, will remain ſound, and come up the following year in May or June without art, and flower all autumn, until killed by the cold.

I would, however, obſerve, that plants raiſed and forwarded in a hot-bed, arrive not only much ſooner to perfection, ſo as to have the pleaſure of their bloom ſix weeks ſooner; but by being thus forwarded into bloom betimes in ſummer, they always produce the beſt ſeeds.

To ſave ſeeds of the fine variegated doubles, ſome pots of them ſhould be placed when in full bloom, either in an airy glaſs-caſe, having the windows in front to open, or in ſome deep frame to be ſheltered with the glaſſes occaſionally from great autumnal rains, and cold nights; you will thereby have a much greater chance of having plenty of ſeed perfectly ripened.

INARCHING. See GRAFTING.

INFLORESCENTIA, *Inflorescence*, or manner of flowering of all kinds of plants.

The term Inflorescence, ſignifies the mode or manner in which flowers are produced upon the plants, which is various, though in all the known plants and trees in the world, there is but ſeven or eight different modes of flowering, which are expreſſed by the following terms.

*Capitulum*, *Corymbus*, *Panicula*, *Racemus*, *Spica*, *Thyrſus*, *Verticillus*, and *Umbella*; for an explanation of each of which, ſee each under its proper head.

INOCULATION, or budding, a method of propagation, practiſed occaſionally for various trees, but more particularly the fruit-tree kind.

The work of Inoculation, or budding, is the inſerting an eye or bud of one tree into the ſide of another, and the bud uniting therewith, ſhoots out into branches, becomes a tree, producing flowers and fruit the ſame in all reſpects as thoſe of the tree from whence it was taken; thus any ſort of tree may be multiplied at pleaſure, ſince every bud will form a tree exactly of the ſame ſort, though upon a different ſtock and root; as for example, inſert buds of peach, nectarine, and apricot trees into plum-ſtocks, which being headed the ſpring after, the bud ſhoots and becomes the tree; which, though the root, and the bottom of the ſtem is a plum-tree, the upper branchy part being produced from the inſerted bud, is a peach or nectarine, &c. and produces fruit exactly the ſame as that from which you took the buds. It is, therefore, as obſerved of grafting, &c. the only method by which we can with certainty continue and multiply the different approved varieties of many kinds of fruit and other trees; for although their ſeeds will readily grow and become trees, yet, as we formerly obſerved, ſow the ſeed, or kernels of the fineſt varieties of fruit, not one tree out of a hundred, ſo raiſed, will produce any like the original, and but very few that are good, ſo variable are ſeedling fruit-trees, and many others; but the trees or ſtocks, ſo raiſed, being budded with the proper approved ſorts, the buds produce invariably the ſame kind of tree, fruit, flowers, &c. continuing unalterably the ſame.

The work of budding is performed in ſummer, principally in July and Auguſt; by inſerting buds into the ſides of the ſtocks, leaving their heads entire, and the buds remaining dormant till next ſpring, when the ſtock being headed, they ſhoot forth with vigour.

This mode of propagation is particularly uſed for peaches, nectarines, and apricots, which ſucceed better by budding than graſting, and are uſually worked upon plum-ſtocks raiſed from ſeed, and ſometimes by ſuckers, layers, and cuttings, upon particular occaſions,

ſions, as noticed in their reſpective articles. Peach, nectarines, and apricots are alſo often budded upon their own ſtocks, i. e. ſtocks raiſed from the kernels of theſe kinds of fruit; they, however, are commonly more ſtrong and durable upon plum ſtocks.

Plums and cherries are alſo very often propagated by Inoculation as well as by grafting; the cherry, however, is generally the moſt proſperous by the latter method, as being more apt to gum and go off by budding. Both theſe ſorts being of the ſame genus, will grow upon ſtocks of each other, but much the beſt upon their own ſtocks, that is, plum upon plum, and cherry upon cherry ſtocks.

Apples and pears may likewiſe be propagated by Inoculation as well as by grafting, though as they grow freely by grafting, which being the moſt eaſy and expeditious, they are commonly propagated by that method.

In ſhort moſt kinds of fruit-trees, and others that are propagated by grafting, will alſo ſucceed by Inoculation; grafting, however, is more particularly adopted for ſome ſorts, and budding for others, as is always explained under their reſpective articles.

Many ſorts of foreſt-trees, and flowering-trees, &c. both deciduous and ever-greens, may alſo be propagated by Inoculation, and is a certain method of propagation, to continue particular varieties, ſuch as many of the variegated-leaved kinds, as the variegated hollies, &c. and many other ſorts, which is always mentioned in their propagation and culture, under the proper genera.

The Inoculation for all ſorts is commonly performed upon young trees, raiſed from ſeed, ſuckers, layers, &c. which, when raiſed purpoſely for budding and grafting upon, are called ſtocks, and which, when about half an inch thick in the bottom of the ſtem, or a little more or leſs, are of proper ſize for budding; though it may be performed upon ſtocks from the ſize of a gooſe-quill, to an inch or more big: remarking that all Inoculation muſt be performed principally upon ſtocks or trees of the ſame genus, for it is but few trees that will ſucceed upon ſtocks of a different genera. Peaches, however, and nectarines, being of the genus *Amygdalus*, grow freely upon the *prunus*, or plum-tree, as being very near related, and is the moſt common ſtock on which theſe ſorts are uſually budded. But in moſt other kinds of fruit-trees, and others, the ſtocks of the ſame genus or fraternity, muſt be ſtrictly adhered to, both for budding and grafting. See GENUS.

For inſtance, peaches, nectarines, and almonds, may be inoculated either upon their own, or plum-ſtocks, but principally upon the latter to have durable trees. Apricots being of the genus *Prunus*, muſt be budded chiefly on plum-ſtocks, or elſe upon their own. Cherries upon cherry-ſtocks; apples upon apples; pears upon pears, or upon quince-ſtocks, to have dwarfs. Obſerving alſo the ſame of all other kinds of trees and ſhrubs, that are propagated by Inoculating and grafting.

The ſtocks are very commonly raiſed from ſeed, i. e. the kernels or ſtones of the above ſorts of fruit, &c. ſowed in autumn or ſpring, in beds in the nurſery, an inch or two deep; they will come up in April or May following, which when a year or two old, tranſplant them in nurſery-rows, two feet aſunder, and fifteen or eighteen inches diſtant in the rows; here to ſtand for budding, keeping them to one ſtem, and ſuffer their top to run up entire; and having two or three years growth, when about the ſize of your little finger at bottom, or a little more or leſs, they are of due ſize for budding; ſtocks are alſo often raiſed from ſuckers ariſing from the roots of the trees of the reſpective ſorts; likewiſe by layers and cuttings. See STOCKS.

Note, Budding may alſo be performed occaſionally upon trees that already bear fruit, when intended to change the ſorts, or have different ſorts on the ſame tree, or to renew any particular branches of a tree, performing the operation in the young ſhoots of the year, or of one or two years growth.

*Of performing the Operation.*

The Inoculation is always performed in ſummer, when the rind of the ſtock, and that of the cuttings for the buds, will readily ſeparate from the wood; for the buds being cut off from the ſhoots an inch or more long, the woody part adhering thereto is ſtripped off, are then inſerted into the ſide of the ſtock, between the rind and wood thereof, the head remaining entire at preſent; and is done by ſlitting the bark of the ſtock croſs ways, and perpendicularly, as directed below; and the rind and wood being then divided, the bud is inſerted between them; which remaining dormant till ſpring following, when the ſtocks are headed down to the place of inſertion, the bud ſhoots forth, and forms the

new tree, which in ſome ſorts will bear fruit in two or three years.

The proper ſeaſon for performing the operation of budding is from about the middle of July until the middle or latter end of Auguſt: ſome however begin to bud in June, but the buds inſerted ſo early, are apt many of them to ſhoot the ſame year, and the ſhoots not having time to harden, are very liable to be killed in winter; determine therefore upon the end of July, or firſt fortnight in Auguſt to perform the operation, and your buds will all remain dormant till ſpring when they will ſhoot with vigour.

The buds are to be taken only from the young ſhoots of the year, i. e. ſhoots of the ſame ſummer's growth, which muſt be cut from the trees of the ſorts you intend to propagate. Chuſe them from healthful thriving trees; and if fruit-trees, from ſuch that bear the fineſt fruit of their reſpective kinds and varieties: from which cut a quantity of the beſt moderately ſtrong young ſhoots, each day as they are wanted, and as they are gathered cut off all the leaves, not quite cloſe, reſerving about a quarter of an inch of their foot-ſtalks, trimming off alſo the ſoft unripened top-end of each cutting, then cover them from the ſun and air, and take them out as you want them; obſerving as each cutting furniſh many buds, they are to be cut off about an inch and a half long, one at a time, as they are inſerted in the ſtock; remarking that thoſe in the middle-part of the cutting are preferable to thoſe towards each end, though in caſes of ſcarcity of cuttings, every one of them may be uſed; one bud only is commonly inſerted in each ſtock; ſome, however, place two, one on each ſide oppoſite.

The proper height to bud the ſtocks is various, and may be within from about three or four inches of the ground, to ſix feet or more; that is, to have dwarf-trees, they muſt be budded from within about three to ſix inches of the bottom, that they may firſt furniſh branches near the ground. If for half-ſtandards, bud at the height of three or four feet; and if for full ſtandards, at from about five to ſix or ſeven feet height; ſo that you muſt train your ſtocks accordingly, ſome for dwarfs, ſome for half ſtandards, and others for full ſtandards, as is more fully particularized under the ſeveral articles. I would remark, however, that for half and full ſtandards, the budding may, if you pleaſe, be performed as low in the ſtock as for dwarfs, and the firſt ſhoot from the bud trained up to a proper height for a ſtem.

The proper implements and materials for budding, is a ſmall budding-knife, having a flat thin haft, to open the bark of the ſtock, to admit the buds, and a quantity of new baſs ſtrings to tie them.

To proceed to the operation.—Obſerve in the operation of budding, the head of the ſtock is not to be cut off, as in graſting, but the bud is inſerted into the ſide, and the head to remain entire till ſpring after, and then cut down; therefore fix on a ſmooth part on the ſide of the ſtock, at the proper height, rather on the northward ſide, away from the ſun, and with your budding-knife make a horizontal cut acroſs the rind of the ſtock, quite through to the firm wood, then, from the middle of this tranſverſe cut, make a ſlit downward perpendicularly an inch or more long, going alſo quite through to the wood. This done, proceed with all expedition to take off the bud, holding the cutting in one hand with the thickeſt end outward, and with the knife in the other hand, enter it about half an inch, or more, below a bud, cutting near half way into the wood of the ſhoot, continuing it with one clean ſlanting cut, about half an inch or more above the bud, ſo deep as to take off part of the wood along with it, the whole about an inch and a half long; then directly with the thumb and finger, or point of the knife, ſlip off the woody part remaining to the bud; which done, obſerve whether the eye or gem of the bud remains perfect; if not, and a little hole appears in that part, it is improper, and another muſt be prepared; this done, placing the back part of the bud between your lips, expeditiouſly with the back of the knife, or rather the flat haft thereof, ſeparate the bark of the ſtock on each ſide of the perpendicular cut, clear to the wood for the admiſſion of the bud, which directly ſlip down cloſe between the wood and bark to the bottom of the ſlit; and then cutting off, if neceſſary, the top-part of the bud even with the horizontal cut, to let it completely into its proper ſocket; let the parts then be immediately bound round with a ligature of freſh baſs, previouſly ſoaked in water to render it pliable and tough, beginning a little below the bottom of the perpendicular ſlit, proceeding upward cloſely round every part, except juſt over the eye of the bud, and continue it a little above the horizontal cut, not too ſtrait, but juſt ſufficient

cient to keep the whole close, exclude the air, sun, and wet, and promote the junction of the stock and bud. In this manner proceed with the Inoculation of every stock till the whole is finished. The junction of the stocks and buds will be effected in three weeks; and next spring, the head of the stock being cut off, the buds will push out, each producing one shoot, sometimes a yard or more long by the end of summer.

This operation of budding may to those unacquainted, appear a tedious work; but an expert hand will bud several hundred in a day.

In a fortnight at farthest after budding, you will be able to judge which buds have taken, by their fresh appearance.

Three weeks, or thereabouts, after the operation, all those buds that have succeeded, will be firmly united with the stock, and the parts be swelled, and require the bandage to be loosened: let, therefore, the tyings be then taken wholly away, that the buds may have full liberty of growth, in common with the other parts of the stock; which is all that is necessary to be further done until spring, when the stocks must be headed down to the bud.

In spring, about February or March, just before the trees begin to shoot, cut off the head of the stock sloping, exactly above the bud, not three or four inches higher as is commonly done; after this, the whole effort of the stocks being directed to the buds, they will soon push forth strong, one shoot from each bud; many shoots will also arise from the stock, but these must be constantly rubbed off as often as they appear, that all the powers of the stock be collected for the vigour of the bud-shoot, which now commences the tree, and by the end of summer will, in some sorts, be advanced three or four feet high; and in the autumn or spring following, the young trees may be transplanted into the places where they are to remain, or may remain longer in the nursery as shall be convenient, according to the purposes for which they are designed.

Observe, however, that whersoever the trees are, if designed to be dwarfs, the first shoot from the bud, should in the spring after it is produced, be shortened or headed down to four or five eyes, to force out first some lower shoots near the bottom, as directed for dwarf-trees, espaliers, &c. but if designed for half or full standards, and if they were budded at proper height at first in tall stocks, and designed for detached standards in the open ground, the first shoot of the bud may either be shortened as above, to four or five eyes, to provide lateral branches near the top of the stem, to form a spreading head; or may be suffered to grow up in height, and branch out in its natural way, whereby it will form a more erect head of loftier growth; remarking, however, that such full or half standards as are designed for walls, and were budded high on the stocks, must necessarily have the first shoots headed down in the spring following, to force out lateral shoots to furnish the allotted space of walling; observing again on the other hand, that trees designed for any sort of standards, and are budded low in the stock, the first shoot of the bud must be trained up for a stem to a proper height before it is stopped; and when arrived to its proper stature, should be topped to throw out shoots to form a head at the desired height, either for walls or open-ground standards. See DWARF-TREES, ESPALIERS, WALL-TREES, and STANDARD-TREES, &c.

For the further management of budded trees, see the different articles under their proper genera, where the general culture of each sort, both dwarfs and standards, is fully exhibited.

IPOMOEA, *Quamoclit, or Scarlet Convolvulus.*

The plants are herbaceous, twining climbers, natives of the Indies, consisting of tender annuals and perennials of the flowery kind, rising with twining stalks upon support six or eight feet high, adorned with simple, cordated leaves, and monopetalous flowers.

Class and order, *Pentandria Monogynia.*

*Characters.*] CALIX, is small, five-parted, and permanent. COROLLA, is monopetalous and funnel-shaped, the tube very long and nearly cylindric, and the limb five-parted and spreading at top. STAMINA, five long filaments, and roundish antheræ. PISTILLUM, a roundish long style, and headed stigma. PERICARPIUM, a roundish trilocular capsule and three seeds.

There are several species, but not more than one common to the English gardens, which is a climbing flowery annual, very nearly allied to the *Convolvulus.*

IPOMOEA *Coccinea.*

*Scarlet Ipomoea, commonly called Scarlet Convolvulus.*] Ipomoea, with long, slender, twining stalks, rising upon support six or seven

ven feet high; heart-formed, pointed leaves, angulated at the baſe; and from the ſides of the ſtalks and branches, many ſlender foot-ſtalks, each ſupporting ſeveral large funnel-ſhaped, beautiful ſcarlet flowers.

*Variety* ] With orange-coloured flowers.

Both the varieties are annual, riſe from ſeed in ſpring, flower in July and Auguſt, &c. ripen ſeeds in September and October, and wholly periſh ſoon after.

They are tender, require to be raiſed and forwarded in a hot-bed until the middle or latter end of May, or beginning of June, according to the temperature of the ſeaſon; and then may be planted out to adorn the borders, and ſome may be planted in pots to move occaſionally to ornament any particular place; in either method, you muſt have ſticks placed for them to twine upon.

The propagation is by ſeed annually, in March or April, in a hot-bed, along with other annuals of ſimilar quality; may be ſowed in ſmall drills, half an inch deep; and in May or June, as aforeſaid, plant them out into the open ground; or, if when the plants are come up an inch or two high, they are taken up and pricked down upon the ſame, or rather in a new hot-bed, it will forward and prepare them better for final tranſplantation: or the ſeed may be ſowed in ſmall pots, three or four ſeeds in each, and the plants may be turned out with the earth about their roots, where they are deſigned to flower: obſerving during their reſidence in the hot-bed, to admit air, and give refreſhment of water, as directed for annuals of the ſame temperature. See ANNUAL PLANTS.

IRIS, *Flower-de-luce*, or Flag-flower, &c.

This genus is very comprehenſive in a numerous family of herbaceous, flowering perennials, both of the fibrous, tuberous, and bulbous-rooted kind, producing thick annual ſtalks, from three or four inches to a yard high, terminated by large hexapetalous flowers, having three of the petals reflexed quite back, and three erect, moſt of which are very ornamental garden flowers.

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX, a permanent ſpatha. COROLLA, ſix oblong obtuſe petals, the three outer are reflexed back, the interior ones erect, and all of them united at the baſe. STAMINA, three ſubulate filaments lying on the reflexed petals, and oblong depreſſed antheræ. PISTILLUM, an oblong germen under the corolla, ſhort ſtyle, and large ſtigma divided into three broad ſegments. PERICARPIUM, an oblong, angular, trilocular capſule, and many large ſeeds.

To this genus is now added, the *Hermodactylus*, or Snake's head Iris—*Xiphium*, or Bulbous Iris—and a ſpecies of *Siſyrinchium*; their generic characters determining them to be all ſpecies of this genus. Each of theſe, however, is exhibited under a ſeparate head.

The flowers of all the ſpecies of this genus have great ſingularity in their ſtructure; they are large, conſiſting each of ſix petals, the three interior ones ſtanding erect, called ſtandards, and the outer ones reflexed backward, called falls, which in ſome ſpecies are bearded, having a downy matter running along the middle; other ſpecies are unbearded, having the bent petals ſmooth, and in the centre a ſort of three-lobed nectarium, like three ſmaller petals, one generally inclining towards each fall.

So that they may be divided into two claſſes, the bearded, and unbearded kinds.

### *Bearded Kinds.*

Theſe are moſtly of the ſword-leaved kind; have thick, knotty, fleſhy, perennial roots; ſending up annually cluſters of long, flat, enſiforme, erect leaves, from three inches to two feet in length; and amidſt them upright thick flower-ſtalks, of various ſtatures in different ſorts; ornamented in moſt ſpecies with leaves the ſame as the radical ones; and terminated by the flowers, in ſome but one, others two, three, or more, one above another, appearing moſtly in May, June, and July; ſucceeded in ſeveral of them by plenty of ſeed.

¹IRIS *Pumila.*

*Dwarf Auſtrian Iris.*] Hath a large, fleſhy, knotty root, riſing above-ground; crowned with many broadiſh erect leaves, three or four inches long; and ſhort erect flower-ſtalks, three inches high; each terminated by one large bearded flower, of different colours in the varieties; flowering in May.

*Varieties are.*] Dwarf Iris, with pale-purple flowers—deep-purple flowers——blueiſh flowers—with red flowers——bluſh-coloured ſweet-ſcented flowers—white flowers——and with variegated flowers.

All theſe varieties are very pretty garden flowers, for the fronts of borders, &c.

²IRIS *Suſiana.*

*Chalcedonian Black and White Iris.*] Hath a thick, fleſhy, ſpreading root; crowned by ſeveral long, narrow, ſharp-edged, erect leaves,

leaves, embracing one another at the baſe; and upright, jointed, firm ſtalks, two feet high; each terminated by one very large bearded flower, having the three up-right petals, or ſtandards, very broad, and variegated with black and white ſtripes and duſky ſpots, and the three falls or bending petals almoſt black, and conſtructed like an open mouth, the ſtamina repreſenting the tongues; ſo that the whole flower exhibits a ſtrange and formidable appearance.

[3]IRIS *Germanica.*

*German Violet-coloured Iris.*] Hath a thick, jointed, fleſhy, ſpreading root; cluſters of ſharp-edged, pointed leaves, a foot and a half long, embracing each other below, but ſpread out fan-faſhion above; and upright, branchy flower-ſtalks, two feet high; ſuſtaining many bearded violet-coloured flowers, one above another, the lower ones having foot-ſtalks; flowering in the end of June and July, ſucceeded by plenty of ſeeds.

[4]IRIS *Florentina.*

*Florentine White Iris.*] Hath a thick, fleſhy, ſpreading root; cluſter of broadiſh ſharp-edged leaves, a foot and a half long; and upright flower-ſtalks, taller than the leaves; terminated by two or three cloſe-ſitting white flowers; appearing in June and July.

[5]IRIS *Squalens.*

*Squalid Purple and Yellow Iris.*] Hath thick fleſhy roots; broad, rough, ſharp-edged leaves, a foot and a half long; and upright flower-ſtalks, near two feet high; ſuſtaining ſeveral bearded, ill-coloured, purple and yellow flowers; appearing in June and July.

[6]IRIS *Sambucina.*

*Sambuca-ſcented Violet and Blue Iris.*] Hath thick roots; broad, ſharp-edged, pointed leaves, a foot and a half long; and upright flower-ſtalks, about two feet high; terminated by ſeveral bearded, violet and blue flowers, having the falling petals plane, and the erect ones emarginated; and ſmell ſtrongly like elder; appearing in June or July.

[7]IRIS *Variegata.*

*Variegated Hungarian Iris.*] Hath thick knotty roots; crowned by many broad, ſharp-edged, pointed leaves, near two feet long; and upright ſtalks, two feet high, branching near the top; each diviſion ſupporting two or three large bearded flowers, having the erect petals yellow, the falls white, ſtriped with purple, and variegated ſtigmas; flowering in June.

[8]IRIS *Aphyllis.*

*Leafleſs, or Naked-ſtalked, purple and White Iris.*] Hath thick roots; very broad leaves, a foot or two long; and upright leafleſs ſtalks, the length of the leaves; terminated by three or four large, bearded, bright purple flowers, having the falls ſtriped with white; appearing in May.

[9]IRIS *Biflora.*

*Twice-flowering Portugal purple Iris.*] Hath a thick, knotty root; broad ſhort leaves, eight or ten inches long; and upright ſtalks, ſix or eight inches high, branching at top into foot-ſtalks; each ſupporting two or three bearded, deep-purple flowers; appearing in May, and ſometimes again in autumn.

*With Unbearded Flowers.*

Moſt of theſe are alſo of the ſword-leaved kind, and moſtly with thick fleſhy roots, all perennial, with the leaves riſing in cluſters from the root annually, and amidſt them the flower-ſtalks, ſupporting the flower at top.

[10]IRIS *Verna.*

*Spring-flowering Dwarf Virginia Iris.*] Hath a fibrous root; crowned by a cluſter of very narrow graſs-like leaves, eight or nine inches long; and upright flower-ſtalks, ſhorter than the leaves; terminated by one unbearded, ſweet-ſcented flower, having blue ſtandards, and purple falls; flowering early in May.

[11]IRIS *Verſicolor.*

*Variable-coloured American Iris.*] Hath a thick fibry root; ſword-ſhaped leaves, a foot long; upright taper ſtalks, a little taller than the leaves; terminated by two or three unbearded flowers above one another, having light-blue ſtandards, and deep purple falls, variegated with a broad white line through the middle; flowering in June.

[12]IRIS *Graminea.*

*Graſs-leaved Auſtrian Iris.*] Hath fibrey roots, narrow, flat, graſſy leaves, about a foot long; upright, two-edged ſtalks, ſhorter than the leaves; terminated by two or three ſmalliſh unbearded flowers above each other, having reddiſh purple ſtandards variegated with violet, and light purple falls, with a broad yellow ſtripe along the middle, adorned with purpliſh ſtreaks; and a ſexangular germen; in July.

[13]IRIS *Spuria.*

*Stinking narrow-leaved Meadow Iris.*] Hath a thick fibrey root; crowned with many very narrow leaves, near a foot long; and upright

taper

taper ſtalks, a little taller than the leaves; adorned with three or four unbearded flowers, having pale blue ſtandards, and purple variegated falls, with a white line down the middle; and a ſexangular germen; flowering in July. Is a native of Germany.

[14]IRIS *Martinicenſis.*

*Martinican Blackiſh yellow Iris.*] Hath long narrow leaves, upright ſtalks, ſupporting two or three unbearded blackiſh-yellow flowers, glandulous near the baſe, and a trigonous germen; flowering in June or July.

[15]IRIS *Sibirica.*

*Siberian Narrow-leaved blue Iris.*] Hath thick fibrey roots; crowned with narrow ſword-ſhaped leaves, a foot and a half long; upright foot-ſtalks taller than the leaves; terminated by two or three unbearded flowers above each other, having light blue ſtandards, and deep blue falls ſtriped with white; flowering in July, and ripen plenty of ſeeds.

[16]IRIS *Fœtidiſſima.*

*Moſt Stinking Iris, commonly called Stinking Gladwin.*] Hath thick fibrous roots; ſword-ſhaped graſs-green leaves, fifteen or eighteen inches high; and upright one-angled flower-ſtalks, about the height of the leaves; ſuſtaining two ſmalliſh unbearded purple flowers, having the interior petals ſpreading; flowering in July.

*Variety.*] With ſtriped leaves.

Both the varieties retain their leaves all the year, and the ſtriped-leaved ſort forms a pretty variety at all ſeaſons; they grow wild in marſhy places in England, but are admitted into gardens for variety.

[17]IRIS *Pſeudacorus.*

*Baſtard-acorus, or common yellow Flag-flower of our marſhes.*] Hath a thick, fleſhy, ſpreading root; crowned with many long, ſword-ſhaped, erect leaves, two or three feet in length; and upright firm flower-ſtalks, a yard high, terminated by a few yellow flowers, having the interior petals leſs than the ſtigma; flowers in June. It grows wild in marſhy places, and ſtanding waters all over the kingdom, and is only cultivated ſometimes for variety.

All the above ſeventeen ſpecies are very hardy perennials, of great duration in root, but in moſt are annual in leaf, and all of them renew their flower-ſtalks annually in ſpring, and decays in autumn ſoon after they have flowered and produced ſeeds. They are all proper ornamental furniture for the compartments of the pleaſure-gardens, either in borders or to intermix in the ſhrubbery-clumps, between the ſhrubs and trees, for they will proſper in any common ſoil and ſituation, and effect a very agreeable variety during their bloom; which in the different ſorts is continued two or three months, i. e. May, June, and July.

They may be planted at almoſt any time from September till March, though September, October, and November is the moſt eligible ſeaſon, as they will be more firmly rooted, ſo as to flower ſtrong the following ſummer; obſerving, that as moſt of the ſorts are apt to ſpread greatly at root, they ſhould be reduced occaſionally, either by ſlipping them, or tranſplanting every two or three years, or as you ſhall ſee neceſſary to preſerve them within due compaſs.

The propagation of all the ſorts is effected abundantly by dividing their roots, as they multiply exceedingly by off-ſets, which may be parted any time from September until March. I would, however, adviſe it to be done principally in autumn, in September, October, or November, whereby they will be more firmly rooted, and flower in good perfection the following ſummer.

They are alſo eaſily raiſed from ſeed, which is the method to obtain new varieties: ſow the ſeed in autumn, ſoon after it is ripe, any time in September, in a bed or border of common earth, and rake it in, and the plants will riſe in ſpring following: which in autumn ſhould be tranſplanted, and they will flower a year or two after.

*Hermodactyle Iris.*

This was formerly a diſtinct genus, but its generic *Characters* prove it only a ſpecies of *Iris.*

[18]IRIS *Tuberoſa (Hermodactylus).*

*Tuberous-rooted Iris, or the Hermodactyle, or Snake's-head Iris.*] Hath a large tuberous root, conſiſting of large tubers; ſending up ſeveral long tetragonous, or four-cornered leaves; and amidſt them an upright ſtalk, a foot or more high, terminated by one large purple unbearded flower, in April or May; but rarely produce ſeed in England.

It is a native of Arabia, but is very hardy, and long an inhabitant of our gardens; is eaſily propagated by its tubers, which the main roots furniſh by off-ſets annually, and ſhould be taken off at the decay of the leaves in ſummer.

This

This ſpecies is remarkable for ſtriking its roots deep into the ground, often ſo low as to loſe themſelves, eſpecially in very light ſoils, in which caſe they ſhould be annually tranſplanted, when their leaves decay.

*Xiphium, or Bulbous Iris.*

The *Xiphium*, including the bulbous and Perſian Iriſes, was formerly conſidered as a diſtinct genera; but, according to the Linnæan ſyſtem, all the ſorts are now retained as ſpecies and varieties of this genus, their characters agreeing exactly with the common *Iris*; the flowers conſiſting of ſix petals, three of them ſtanding erect, and three reflexed backward, &c.

There are but two ſpecies, the common Bulbous Iris, and Perſian Bulbous Iris; both very hardy, and the former of which is prolific in many fine varieties; the latter is alſo a a beautiful ſpring flower.

[19]IRIS *Xiphium.*

*Xiphium, or Bulbous Iris.*] Hath a large roundiſh, fleſhy, bulbous root; ſending up ſeveral awl-ſhaped, channelled, ſharp-pointed leaves; amid them an upright ſhorter flower-ſtalk, from half a foot to a foot or more high; terminated by two or three large beautiful flowers of different colours in the varieties.

*Varieties of this are.*] Common blue flowered bulbous Iris—with violet-coloured flowers—white flowers—purple-flowered—yellow flowering—with blue ſtandard petals and white falls—with blue ſtandards and yellow falls—with ſtriped flowers—broad-leaved with blue flowers—broad-leaved purple-flowered—ſweet-ſcented blue-flowered—ſweet-ſcented purple flowers—and with variegated ſweet-ſcented flowers: with many other intermediate varieties.

All theſe ſorts flower beautifully in May and June, in the open borders, &c. though ſome a month or ſix weeks earlier than others, and are ſucceeded by plenty of ſeeds in autumn; and may be propagated plentifully by off-ſets of the root, like other bulbs.

[20]IRIS *Perſica.*

*Perſian Bulbous Iris.*] Hath a large oval bulbous root; ſending up ſeveral awl-ſhaped channelled leaves, ſix inches long; and amid them an upright ſhort ſtalk, three inches high, crowned by one or two large elegant flowers, with the interior petals ſpreading and ſerrated, having whitiſh-blue ſtandards, and pearly white falls, variegated with yellow and purple, and of a fragrant ſcent; appearing in February and March. It is valuable both for its early bloom and the great beauty of its flowers.

Both the above ſpecies and reſpective varieties of bulbous Iris, have great merit as flowery plants; will grow freely in any of the common borders, and are pretty ornaments for the pleaſure-garden; planting them, in autumn, to adorn the principal borders, in ſmall patches towards the front, ſetting them about three inches deep; they will all flower the following year at their proper ſeaſon; and the bulbs will abide for years, and flower annually; it is, however, proper to take them up every ſecond or third year at leaſt, at the decay of the leaves, to ſeparate the off-ſets, &c.

The propagation of both theſe ſpecies of bulbous Iris, and varieties, is principally by the off-ſets of the roots, like other bulbs, which they afford in tolerable plenty, eſpecially if ſuffered to remain undiſturbed two or three years, when they will be greatly encreaſed; the proper time for lifting the roots and ſeparating the off-ſets, is in ſummer, when the leaves decay, managing them as other bulbs. See BULBUS.

They are alſo propagated by ſeed to gain new varieties. Sow it in September, in a bed of light ſandy earth, that has only the morning ſun, covering it with fine earth half an inch deep; or it may be ſowed in pots, boxes, or tubs of the like light ſoil, which may be moved at pleaſure to a warm, or ſhady ſituation at different ſeaſons: the plants will riſe in ſpring following, which in the ſummer twelvemonth after, at the decay of the leaves, remove from the ſeed-bed, and plant them into another, three inches apart, and two deep, to remain two or three years, when they will flower ſufficiently ſtrong to diſcover their properties; then are to be managed as the other large bulbs.

*Siſyrinchium Iris.*

[21]IRIS *Siſyrinchium (Bulboſa).*

*Bulbous Siſyrinchium.*] Hath a double bulbous root, growing one upon another; crowned with long, narrow, channelled, ſharp-pointed leaves; and an upright firm flower-ſtalk, half a foot high, terminated by two or three ſmalliſh blue flowers; appearing in ſummer.

*Variety*] With yellow ſpotted flowers.

This ſpecies is alſo proper furniture to encreaſe the variety of bulbous-rooted flowers;

and its culture and propagation is the ſame as the two former ſpecies of bulbous Iris.

ITEA, *Itea.*

One ſpecies only, a hardy deciduous flowering ſhrub, conſtitutes this genus, and is proper for the ſhrubbery.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX, is monophyllous, acutely five-parted at top, and permanent. COROLLA, five long ſpear-ſhaped petals. STAMINA, five awl-ſhaped filaments, and roundiſh antheræ. PISTILLUM, an oval germen, cylindric permanent ſtyle, and obtuſe ſtigma. PERICARPIUM, an oval, long, unilocular capſule, terminated by the ſtyle, and contains many ſmall ſeeds.

The ſpecies is;

ITEA *Virginica.*

*Virginian Itea.*] Hath a ſhrubby ſtem, branching out irregularly all around from the bottom upward, ſix or ſeven feet high; ſpear-ſhaped, ſlightly-ſawed, alternate leaves; and all the branches and ſhoots terminated by long erect ſpikes of white flowers, making a fine appearance in July.

This beautiful ſhrub ſhould have a place in the moſt conſpicuous ſhrubbery compartments, for being ſo very floriferous as to appear covered with its bloom, continuing in great beauty a fortnight or three weeks.

It is propagated by ſeed and by layers.

The ſeeds arrive from America in ſpring, when they ſhould be ſowed in pots or boxes of light ſandy earth, and plunge them in the ground till next year in March; then, if the plants are not come up, plunge them in a hot-bed, which will greatly promote their growth, giving frequent waterings all the ſummer, and allow them the ſhelter of a frame or green-houſe the two firſt winters; then in ſpring after plant them out in nurſery rows a foot aſunder, and in two or three years, they will be ready for the ſhrubbery.

Layers of the young ſhoots made in autumn or ſpring, making a ſlit in the part to be layed, will be rooted by autumn following.

IVA, Jeſuit's-Bark Tree.

There are two ſpecies, one a hardy deciduous ſhrub for the ſhrubbery, and the other an herbaceous annual, but the former is the ſort principally cultivated.

Claſs and order, *Monoecia Pentandria.*

*Characters.*] CALIX, male and female flowers apart on the ſame plant, having a roundiſh permanent cup, containing many florets. COROLLA, a compound convex flower, having many funnel-ſhaped male florets in the diſc, and the females are apetalous. STAMINA, five briſtly filaments, and erect antheræ. PISTILLUM, an oblong germen, two hair-like ſtyles, and acute ſtigmas. PERICARPIUM, none, ſolitary ſeeds lodged naked on the proper receptacle.

The ſpecies is;

IVA *Fruteſcens.*

*Shrubby Iva, commonly called Jeſuit's-Bark Tree.*] Hath a ſhrubby ſtalk and branches of ſlender growth, riſing eight or ten feet high; ſpear-ſhaped ſawed leaves; and monoecious pale purple flowers, in cluſters from the ends of the branches, in Auguſt or September, but no ſeeds in England.

It is an American ſhrub, but hardy enough to grow here in the open ground, and is proper for the ſhrubbery plantations, allowing it a dry ſoil, and ſheltered ſituation.

Its propagation is by layers and cuttings; lay the young branches in ſpring, and they will be rooted and fit to tranſplant in autumn; and plant cuttings of the young ſhoots in April or May, in a ſhady border, they will readily emit roots.

JUGLANS, Walnut-Tree.

This genus conſiſts of large, hardy, deciduous trees, eminent as fruit-trees, foreſt-trees, and for ornament, attaining from thirty to forty or fifty feet ſtature, branching into large very ſpreading heads, adorned with elegant pinnated leaves, and monoecious flowers in amentums and cluſters.

Claſs and order, *Monoecia Polyandria.*

*Characters.*] CALIX, male and female flowers apart on the ſame tree; the males in oblong, cylindric, ſcaly amentums, each floret having a ſcale for its cup; and female flowers in cloſe-fitting cluſters, with a four-pointed cup to each floret. COROLLA, in the males, is a ſix-parted plane floret, and in the females, is acute, four-parted, and erect. STAMINA, in the males many ſhort filaments, and acute erect antheræ. PISTILLUM, in the females, a large oval germen under the calix, two ſhort ſtyles, and large reflexed ſtigmas. PERICARPIUM, a large, oval, drupaceous, unilocular fruit, incloſing a large oval or roundiſh knotted, furrowed nut, nearly quadrilocular, having a four-lobed, furrowed kernel.

There are three ſpecies common to our Engliſh plantations, each comprehending ſome varieties, though the common walnut is

is that which is moſt generally cultivated, both as a fruit and timber-tree; all the others, however, are equally hardy, produce eatable fruit, though with much ſmaller kernels than the common ſort; therefore the common walnut is the moſt eligible for general culture for the fruit; but conſidered as ornamental and foreſt trees, all the ſorts are proper.

The ſpecies are;

[1]JUGLANS *Regia.*

*Common Walnut-tree.*] Grows fifty feet high, or more, with a large upright trunk, branching into a very large ſpreading head; large pinnated leaves, of two or three pair of oval, ſmooth, ſomewhat ſerrated lobes, terminated by an odd one; and monoecious flowers; ſucceeded by cluſters of large green fruit, encloſing furrowed nuts of different ſhapes and ſizes in the varieties; ripen in September and October.

*Varieties are.*] Common oval Walnut—round Walnut—large Walnut—ſmall-fruited Walnut—double Walnut—early Walnut—late Walnut—tender thin-ſhelled Walnut—hard thick-ſhelled Walnut.

There are ſome other ſeminal variations, for plants raiſed from the nuts of the ſame tree, will often produce different varieties of fruit, as is common with moſt other fruit-trees. The wood, leaves, and outer covers of the fruit of all the varieties of this ſpecies is extraordinary bitter, and the ſkin of the kernel is a ſtrong bitter aſtringent, which ſhould be peeled off, the kernel then eats very palatable with an agreeable flavour.

[2]JUGLANS *Nigra.*

*Black Virginian Walnut.*] Grows forty or fifty feet high, with a large trunk, and very branchy ſpreading head; large pinnated leaves, conſiſting in different varieties, of from five or ſix to ten or twelve ſpear-ſhaped, ſawed lobes, terminated by an odd one, the lower lobes the leaſt; and monoecious flowers, ſucceeded by rough hard-ſhelled nuts, differing in ſhapes and ſize in the varieties.

*Varieties are.*] With round fruit——with oblong deeply-furrowed fruit—with aromatic-ſcented leaves.

[3]JUGLANS *Alba.*

*White Virginia Walnut, commonly called Hickory Nut.*] Grows thirty feet high, having pinnated leaves, which, in different varieties, conſiſt of from two or three to ſix or ſeven pair of ſpear-ſhaped ſawed lobes, terminated by an odd one; and monoecious flowers; ſucceeded by oval ſmooth nuts, having a whitiſh ſhell.

*Varieties of this are.*] Smooth-barked white Virginia Walnut——ſhag-bark white Virginia Walnut, having the ſtem and older branches covered with a rough ſcaley bark—with large fruit—with ſmall fruit.

The flowers of all theſe trees are male and female apart on the ſame plant; the males commonly in oblong cylindric katkins, and the females in cloſe cluſters, appearing generally in April and May; ſucceeded in the females, by large roundiſh green fruit, each including one nut, having a hard ſhell filled with an eatable kernel; but thoſe of the common Walnut are the largeſt and fineſt flavoured; all of them ripening in September and October.

All the three ſpecies and reſpective varieties are very hardy, and proſper in any common ſoil; they are all deciduous; their leaves come out in May, and fall off in October and November.

They are all employed occaſionally in plantations, both as foreſt-trees for timber, and to intermix in plantations for ornament, and the *Juglans Regia* alſo as a fruit-tree; all the ſorts are alſo peculiarly adapted to plant as detached ſingle objects in parks and paddocks, as having very large, regular ſpreading heads; they have likewiſe a fine effect diſpoſed in groups of three or more trees together at ſufficient diſtances from one another for their heads to ſpread; and are alſo proper to uſe in aſſemblage to form avenues, and to plant in hedge rows, in the boundaries of fields and other open places, for they will thrive either on plains, the ſides of hills, or in vales, in almoſt any ground, but delight moſt in a loamy ſoil.

They are all of large ſpreading growth; but the firſt and ſecond ſpecies are the largeſt growers; their trunks acquire a conſiderable ſtature and ſubſtance, and divide into very large arms, forming monſtrous ſpreading heads, particularly the common Walnut; the black Virginia Walnut, however, grows rather the moſt upright.

Conſidered as foreſt or timber-trees, they are alſo all very proper to be admitted of that tribe, and placed among the hardy deciduous kinds, for their timber is valuable for many purpoſes; not, however, where ſtrength is neceſſary, it being of a very brittle nature, but the cabinet-makers and joiners eſteem it

greatly for ſeveral ſorts of houſhold furniture, and other light works, for the wood being beautifully veined, takes a fine poliſh, and the more knotty it is, the more it is valued for particular purpoſes.

With reſpect to their merit as fruit-trees, all the ſorts produce fruit here, but the common Walnut the largeſt, moſt plentiful, and fineſt eating; the others having very ſmall kernels. The common Walnut-tree, therefore, is the only proper ſpecies of *Juglans* to cultivate as a fruit-tree for the ſake of the Walnuts; and it may be planted as ſtandards in orchards, like other fruit-trees, but at a greater diſtance, as having large ſpreading heads; or, are well adapted for planting round the boundaries of orchards, where they will alſo guard the other leſſer fruit-trees from boiſterous winds; and may be planted as fruit-trees in parks or paddocks, and in rows round fields, or in any open place where thought convenient; they are raiſed plentifully from the nuts, and planted out in nurſery rows, as directed below; and in five or ſix years the plants will be ſix or eight feet high, with firm ſtems and handſome heads, when they may be planted out where they are to remain; though the younger theſe trees are planted out, the better they will ſucceed; or if the nuts were planted at once where the plants are always to ſtand, the trees would ſtill be of more quick and larger growth; obſerving in either mode of planting, that as the trees branch out into very ſpreading heads, they ſhould ſtand thirty or forty feet each way aſunder; planting them with their heads entire, and ſuffer their branches and ſhoots always to advance according to their own natural growth, without ſhortening; for the trees produce their fruit on the young ſhoots ariſing towards the extremity of the branches, ſo ſhould never be ſhortened except in caſes of very irregular growth, or great ramblers. See STANDARD FRUIT-TREES.

It is, however, a common opinion, that beating theſe trees with large poles to get down the fruit, (which conſequently breaks many of the ſhoots) promotes their bearing; the only reaſon that can be aſſigned for this opinion is, that the trees producing their fruit upon the young ſhoots of the laſt and ſame year, as aforeſaid; and that by beating the branches with long poles, as the moſt expeditious way of gathering the fruit from large trees, it breaks off many older ſhoots, alſo the ends of many of the young ones, which probably, like ſhortening with a knife, forces out a greater ſupply of young ſhoots the following year for bearing. I ſhould, however in the operation of beating down the fruit, be for ſaving the branches as much as poſſible.

Theſe trees ſeldom begin to bear fruit till they are ſeven or eight years old, but never any conſiderable quantity till they are treble that age, when they have formed large heads.

The fruit is uſed at two different ſtages of growth; when green, to pickle; and when ripe, to eat raw.

As a pickle, the young green walnut, when about half or near three-parts grown, before the outer coat and ſhell becomes hard, is a moſt excellent vegetable pickle; and for which purpoſe they are generally ready in July and Auguſt, obſerving that for this uſe they muſt be gathered by hand, chuſing ſuch as are as free from ſpecks as poſſible.

The ripe fruit will be fit in the latter end of September and October, which, as before noticed, is commonly beat down with long poles, eſpecially on large trees, for as the Walnuts grow moſtly at the extremity of the branches, it would, in large trees, be troubleſome and tedious work to gather them by hand. As ſoon as gathered, lay them in heaps a few days to heat and ſweat, to cauſe their outer huſks, which cloſely adhere, to ſeparate from the ſhell of the nuts; then clean them from the rubbiſh, and depoſit them in ſome dry room for uſe, covering them over cloſe with dry ſtraw, half a foot thick, and they will keep three or four months.

Walnuts are always ready ſale at market, eſpecially thoſe of London, where at their firſt coming in, they are brought with their huſks on, and ſold by the ſack, or buſhel, but afterwards are brought clean, and ſold both by meaſure and by the thouſand.

Thus plantations of Walnut-trees are profitable in their annual crops of fruit while growing, and in their timber when felled.

*Propagation of all the Sorts.*

The propagation of all the ſorts of theſe trees, is moſt commonly by planting the nuts, which grow freely in beds of common earth.

For thoſe of the common Walnut intended for fruit-trees, the beſt varieties of nuts ſhould be procured, ſuch that are large, thin-ſhelled, and with the fineſt flavoured kernels; for although the fineſt ſorts will vary or degenerate

nerate, yet by planting only the very beſt, there will be the greater chance of having a ſucceſſion continued without much degeneracy.

Having procured the nuts at the proper ſeaſon, when perfectly ripe, in their outer cover or huſks, if poſſible; they ſhould be preſerved in dry ſand until February, and then planted: at which time having the ground dug, draw drills two inches and a half deep, and a foot aſunder, in which plant the nuts four or five inches apart, and cover them over with the earth; they will come up the ſame ſpring, and by the end of ſummer the young plants will be half a foot or more high, which, after having two years growth in the ſeed-bed, plant them out in the nurſery; previouſly, when taken up, ſhorten their tap-roots, but preſerve their tops entire, and plant them in rows two feet and a half aſunder, and about eighteen inches diſtant in each row: here they are to remain a few years, training them with ſingle ſtems, till five or ſix feet high, or a little more or leſs, then tranſplant them where they are finally to remain.

Thoſe intended principally as timber trees as well as to bear fruit, ſhould be always planted out for good when from three to four or five feet high, or if the nuts were planted at once where the trees are deſigned to remain, without tranſplanting, they would aſſume a quicker and ſtronger growth.

The nuts of the ſecond and third ſpecies, are annually ſent hither from America, and may be had of moſt of the nurſery-men and ſeed dealers; they commonly arrive in ſpring, and ſhould be ſowed as ſoon as poſſible after their arrival, in the ſame manner as directed for the common Walnut.

JUNIPERUS, Juniper, and the *Cedrus* and *Sabina*.

This genus furniſhes beautiful ever-greens of the ſhrub and tree kind, for ornamental plantations, growing from three or four to thirty or forty feet high in different ſorts, often branchy to the very bottom, and of pyramidal growth; cloſely garniſhed with very ſmall narrow leaves, placed moſtly imbricatum, remaining all the year; and dioecious flowers, of no beauty, ſucceeded by ſmall berries.

Claſs and order, *Dioecia Monadelphia*.

*Characters.*] CALIX, male and female flowers on different plants; the males in a conical amentum, by threes, having broad ſcaly imbricated calices; and the females a ſmall three-parted cup placed on the germen. COROLLA, none in the males, and in the females three ſtiff permanent petals. STAMINA, three filaments, and three diſtinct antheræ PISTILLUM, a germen under the calix of the females, three ſtyles and ſimple ſtigmas. PERICARPIUM, a roundiſh fleſhy berry, having three ſeeds.

In this genus is retained alſo ſeveral of the *Cedrus*, or Cedars; and the *Sabina*, or Savin, of former botaniſts, which they ranged as diſtinct genera, but are found to be only ſpecies of the Juniperus. There are ſeveral ſpecies, all of them, except the common Juniper, are foreigners, but all tolerably hardy, ſucceed in the open ground, and are great ornaments to our ever-green plantations.

The ſpecies are;

[1]JUNIPERUS *Communis*.

*Common Juniper*. Of which there are the two following

*Varieties.*

*Common Shrubby Engliſh Juniper*.—Grows five or ſix feet high, branching cloſely from bottom to top; forming a very cloſe buſhy plant, thickly garniſhed with narrow, awl-ſhaped, acute-pointed, ſpreading leaves by threes; and ſmall yellowiſh flowers in ſpring; ſucceeded, in the female plants, by purpliſh berries, ripening the following year in autumn.

This variety grows wild in England upon barren heaths and commons, where it produces abundance of berries; but is cultivated in gardens, and trained for an ornamental ſhrub, to encreaſe the variety in ſhrubbery plantations.

*Swediſh Juniper*.—Grows ten or twelve feet high, very branchy the whole length, with the branches growing more erect, and leaves, flowers, and fruit like the former variety. Is a native of Sweden and Denmark.

[2]JUNIPERUS *Oxycedrus*.

*Oxycedrus, or Spaniſh Juniper*.] Grows ten or fifteen feet high, cloſely branched from bottom to top; ſhort, awl-ſhaped, ſpreading leaves by threes, and ſmall dioecious flowers, ſucceeded by large reddiſh-brown berries.

[3]JUNIPERUS *Thurifera*.

*Greater Blue-berried Spaniſh Juniper*.] Grows twenty feet high, or more, branching in a conic form, acute imbricated leaves by fours, and ſmall dioecious flowers, ſucceeded by large blue berries.

[4]JUNI-

[4]Juniperus *Virginiana.*

*Virginia Cedar.*] Grows thirty or forty feet high, branching from bottom to top, in a conic manner; ſmall leaves by threes adhering at their baſe, the younger ones imbricated, and the old ones ſpreading; and dioecious flowers, ſucceeded by ſmall blue berries.

[5]Juniperus *Lycia.*

*Lycian Cedar.*] Grows twenty feet high, branching erectly, garniſhed with ſmall oval, obtuſe leaves, every where imbricated; and dioecious flowers, ſucceeded by large oval brown berries. Is a native of Spain and Italy.

[6]Juniperus *Phœnicea.*

*Phœnician Cedar.*] Grows about twenty feet high, branching pyramidically; adorned with ternate and imbricated obtuſe leaves; and dioecious flowers; ſucceeded by ſmall yellowiſh berries. Is a native of Portugal.

[7]Juniperus *Bermudiana.*

*Bermudian Cedar.*] Grows twenty or thirty feet high; has ſmall acute leaves, by threes below, the upper ones awl-ſhaped, acute, and decurrent, by pairs or fours, ſpreading outward; and dioecious flowers, ſucceeded by purpliſh berries. Is a native of Bermudas.

[8]Juniperus *Sabina.*

*Sabina, or Savin-tree*; Of which there are the following

*Varieties.*

*Spreading Savin.*—Grows but three or four feet high, with horizontal very ſpreading branches; ſhort, acute-pointed, decurrent, erect, oppoſite leaves; and dioecious flowers, ſucceeded by blueiſh berries; but very rarely produces either flowers or fruit.

This variety is uſed in medicine; and it is ſaid the juice of the leaves mixed with milk and honey is excellent for expelling worms in children; and a poultice thereof cures ſcald heads; the juice of it is alſo ſaid to clear the face from freckles; and the farriers eſteem it greatly for deſtroying worms in horſes, it being a powerful operator that way; and its virtues are accounted excellent for many other diſorders.

*Upright Savin.*—Grows eight or ten feet high, with upright branches, dark-green leaves, nearly like the former ſort, and dioecious flowers, ſucceeded by plenty of berries.

*Variegated Savin.*—Having the ends of many of the the ſhoots and young branches variegated with white, and the leaves finely ſtriped, the whole appearing very beautiful.

All theſe ſpecies of *Juniperus* are very pretty ever-greens, of the tree and ſhrub kind, moſtly of pictureſque growth, branching out all around cloſely from bottom to top; all of them very cloſely garniſhed with leaves, which although in general very ſhort and ſmall, yet are ſo numerous and thickly ſet, that the plants appear every way very cloſe and beautiful; and all the ſorts are excellent furniture for all ornamental plantations, where they will have a fine appearance at all ſeaſons of the year, as being always cloathed with leaves; but as to their flowers, they have no beauty, except to the botaniſts for obſervation; and as to fruit, the common Junipers produce plenty, alſo ſome of the others; but the Cedars rarely furniſh many berries in England; nor do the ſpreading Savin, though the upright kind often produce ſuch plenty as to have a very agreeable effect on the plants.

They all ſucceed in the open ground, and will grow in any common ſoil and ſituation, in common with other hardy trees, though they are rather the moſt proſperous in a light ſandy ſoil.

In diſpoſing all theſe kinds of plants in the ſhrubbery plantations, good attention ſhould be had to arrange them according to their degrees of growth, ſo as to exhibit a regular gradation of height, placing the low-growing ſorts, ſuch as the *Juniperus Communis*, and the Savin kinds, towards the front; and the other larger growers more backward in proportion to their ſeveral ſtatures, placing all of them in aſſemblage with other ornamental ſhrubs and trees, principally of the evergreen tribe.

Some of the large-growing ſorts may alſo be introduced into the foreſt-tree plantations; as in their native countries they afford excellent timber for many uſes, more particularly the Virginia cedar, which alſo arrives to a conſiderable ſtature here, eſpecially if the under branches are trimmed off occaſionally while young, to promote their aſpiring in height; they will grow very ſtraight, with fine regular heads.

Moſt of theſe ſpecies of *Juniperus*, emit a ſtrong aromatic balſamic odour, and abound more or leſs with a reſinous juice of ſo exceedingly bitter quality, as to prevent the timber, when converted to oeconomical uſes, from being eaten and deſtroyed by vermin.

*Propagation of all the Sorts.*

The propagation of all the Juniper and Cedar kinds, is by ſeed; and the Savins principally by layers and cuttings; but may likewiſe be raiſed from the berries, if they can be procured; and the ſeeds of all the ſorts are to be ſowed in beds of common light earth, except the Cedar of Bermudas, which muſt be ſowed in pots, to have ſhelter in winter.

The ſeeds of all the ſorts may be had at moſt of the nurſeries and ſeedſmen; obſerving that thoſe of all ſuch ſorts which can be procured in autumn, ſhould be ſowed at that ſeaſon, whereby they will more certainly come up the ſpring following; but thoſe that are not ſowed till ſpring, generally remain in the ground till that time twelvemonth, before they germinate or ſprout, unleſs aided by a hot-bed. Some of the ſorts, however, rarely produce much ſeed here: it is procured annually from the countries where the trees naturally grow, by the ſeedſmen, commonly arrives early in ſpring, and ſhould be ſowed as ſoon after their arrival as poſſible.

All the ſorts, except the Bermudas Cedar, as before obſerved, are to be ſowed in beds of light earth, in the full ground. Having dug the ground, and raked it fine, ſow the ſeeds evenly on the ſurface, and cover them with fine earth half an inch deep. Thoſe ſowed in autumn, will many of them come up in April or May following; but the ſpring ſowings will rarely appear till the following Spring. In either caſe, however, keep the beds clean weeded all ſummer; and thoſe plants that are up, now and then watered. When they have had two years growth in the ſeed-bed, plant them out, in autumn or ſpring, in nurſery rows, two feet aſunder, there to remain till of due ſize for final tranſplantation into the ſhrubbery, &c.

The Bermudas Cedar, as above noticed, being tender, it ſhould be ſowed in pots or tubs of light earth, to be moved under a frame in winter to be ſheltered from froſt; and when the plants are a year or two old, plant them in ſeparate ſmall pots, to be ſheltered alſo in winter three or four years, till they have acquired ſome ſize and ſtrength, then turned out of the pots into the full ground where they are to remain, in a warm ſituation, where let them take their chance, though a ſhelter of mats for the firſt winter or two during hard froſts will be of great ſervice.

The ſeaſon for tranſplanting all the ſorts is either in autumn, October or November, or in March and early in April.

JUSTICIA, *(Adhatoda)* Malabar nut.

It conſiſts of ſhrubby and herbaceous plants, of the Indies, for the green-houſe and ſtove, adorned ſome with fine large leaves, others with ſmall narrow foliage, and all of them with monopetalous ringent flowers.

Claſs and order, *Diandria Monogynia.*

*Characters.*] CALIX, is ſmall and acutely five-parted at top. COROLLA, is monopetalous and ringent. STAMINA, two awl-ſhaped filaments, and erect antheræ. PISTILLUM, a turbinated germen, ſlender ſtyle, and ſimple ſtigma. PERICARPIUM, an oblong bilocular capſule, opening with elaſtic force, and dart out their roundiſh ſeeds.

There are many ſpecies but not more than two common to the Engliſh gardens, both of them of the ſhrub kind for the green-houſe, viz.

[1]JUSTICIA, *Adhatoda.*

*Adhatoda, commonly called Malabar-nut.*] It grows twelve or fifteen feet high, with a ſtrong woody ſtem, branching out widely all around; large lanceolate oval leaves, placed oppoſite; and from the ends of the branches ſhort ſpikes of white flowers, with dark ſpots, having the helmet of the corolla concave.

[2]JUSTICIA *Hyſſopifolia.*

*Hyſſop-leaved Juſticia, or Snap-tree.*] Hath a ſhrubby ſtem, branching from the bottom pyramidally three or four feet high; ſpear-ſhaped, narrow, entire leaves, growing oppoſite; and white flowers, commonly by threes, from the ſides of the branches; ſucceeded by capſules, which burſts open with elaſtic force, for the diſcharge of the ſeeds. Hence the people of India call it Snap-tree.

Both theſe ſpecies flower here in ſummer, but never produce fruit in theſe parts.

They are natives of India, ſo are tender and muſt be kept in pots of light rich earth, and placed in a good green-houſe in winter, or may be placed in a hot-houſe, particularly the ſecond ſort; though they will both live in the open air in ſummer, and in a warm green-houſe in winter, managing them as other ſhrubby exotics of that department.

The propagatton of both ſorts may be effected by layers and cuttings. The laying is per-

performed in ſpring, in the pots; and cuttings of the young ſhoots may be planted any time in ſpring or ſummer, in pots, and plunged in a hot-bed, or in the bark-bed in the ſtove, giving water, and occaſional ſhade from the ſun; they will readily take root.

IXIA, *Ixia.*

This genus conſiſts of herbaceous, tuberous and bulbous-rooted flowery perennials for the pleaſure-ground and green-houſe, growing a foot or two high, terminated by hexapetalous flowers.

Claſs and order, *Triandria Monogynia.*

*Characters.*] CALIX, oblong permanent ſpathæ. COROLLA, ſix oblong, ſpear-ſhaped, unequal petals. STAMINA, three ſhort filaments, and ſimple antheræ. PISTILLUM, an oval triquetrous germen under the receptacle, erect ſtyle, and trifid ſtigma. PERICARPIUM, a roundiſh, three-cornered, trilocular capſule, having roundiſh ſeeds.

There are ſeveral ſpecies, the moſt material of which are:

*Hardy Kinds.*

[1]IXIA *Bulbocodium.*

*Bulbous Italian Ixia.*] Hath a ſmall bulbous root; crowned by ſeveral narrow leaves; and very ſhort flower-ſtalk, terminated by a large crocus-like flower, of different colours in the varieties.

*Varieties.*] With white and yellow flowers —with purpliſh and yellow flowers——blue and white flowers—white flowers—variegated flowers.

[2]IXIA *Chinenſis.*

*Chineſe Ixia.*] Hath a thick, tuberous, knotty root; upright jointed flower-ſtalk, two feet high; garniſhed with ſword-ſhaped leaves a foot long; and the ſtalk dividing upward into forks; ſuſtaining yellow red ſpotted flowers, remote, in forked panicles; appearing in July and Auguſt.

*Tender Kinds.*

[3]IXIA *Bulbifera.*

*Bulb-bearing Ixia.*] Hath a bulbous root; crowned with narrow leaves, ſix or eight inches long; and upright flower-ſtalks, a foot and a half high; garniſhed with leaves, bulbs growing at the joints; and terminated by ſulphur-coloured flowers, placed alternate.

[4]IXIA *Crocata.*

*Saffron-coloured Ixia.*] Hath a bulbous root; ſending up ſword-ſhaped leaves, near a foot long; and upright flower-ſtalks, a foot or more high; terminated by cluſters of deep yellow flowers, arranged alternate, having each a large black ſpot at the baſe; flowering in May.

[5]IXIA *Africana.*

*African Woolly-headed Ixia.*] Hath a ſmall bulbous root; ſending up very narrow leaves; a ſhort flower-ſtalk, three or four inches high; terminated by flowers collected into woolly heads.

The flowers of all theſe plants are compoſed each of ſix oblong petals, appearing in ſummer, and, in warm ſeaſons, ſome ſorts are ſucceeded by ripe ſeeds.

The plants are all permanent in root, but annual in leaves and ſtalk.

The two firſt ſpecies may be planted in the open borders; the ſecond, however, being rather tender, it ſhould have a warm ſituation; and ſome may be planted in pots to remove to ſhelter of a green-houſe or garden-frame in winter, in caſe thoſe in the open ground ſhould be killed by hard froſt.

The three other ſpecies muſt be planted in pots of rich light earth, for moving into the green houſe or garden-frame all winter.

All the ſorts propagate plentifully by offſets of their roots, which ſhould be taken off in ſummer at the decay of the leaves, &c.

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# K.

KALMIA, *Kalmia.*

Of this genus are two hardy evergreen ſhrubs, for the pleaſure-ground, growing four or five feet high; adorned with oval, and ſpear-ſhaped entire leaves, and monopetalous, five-parted, in cloſe round bunches.

Claſs and order, *Decandria Monogynia.*

*Characters.*]

*Characters.*] CALIX, is ſmall, five-parted, and permanent. COROLLA, is monopetalous, with a cylindric tube, and the limb divided into five roundiſh ſpreading ſegments. STAMINA, ten filaments, and ſimple antheræ. PISTILLUM, a roundiſh germen, ſlender ſtyle, and obtuſe ſtigma. PERICARPIUM, a roundiſh quinquelocular capſule having numerous ſmall ſeeds.

The ſpecies are;

[1]KALMIA *Latifolia.*

*Broad-leaved Kalmia.*] Hath a ſhrubby branching ſtalk, growing five or ſix feet high; oval, ſtiff, ſhining green leaves, placed irregularly; and corymbus cluſters of pale-red flowers terminating the branches.

[2]KALMIA *Anguſtifolia.*

*Narrow-leaved Kalmia.*] Hath a ſhrubby ſtalk, dividing into many ſlender branches, growing four or five feet high; ſpear-ſhaped, ſtiff, ſhining green leaves, placed irregularly; and corymbus cluſters of bright-red flowers from the ſides of the branches.

Both theſe ſhrubs are beautiful ever greens, natives of America, but hardy enough to ſucceed any where in the open ground in this country.

They flower in June or July, the flowers collected into round, cloſe-ſitting, corymbus cluſters; each flower is of one petal, tubular below, and five parted and ſpreading above; and thoſe of both the ſpecies are very ornamental, but they are rarely ſucceeded by ripe ſeeds in England.

Theſe ſhrubs are elegant furniture for ornamental plantations, and ſhould be placed towards the front of the moſt conſpicuous ſhrubbery compartments.

Their propagation is by ſeed, ſuckers, and layers.

By Seed.—This arrives from America in ſpring: ſow it either in beds of light ground, or in pots or boxes of light ſandy earth, half an inch deep, and plunge them in an eaſterly border till ſpring following; and then, if the plants do not come up before, if the pots are plunged in a hot-bed it will forward them greatly; but innure them betimes to the full air all ſummer; and in winter give ſhelter from froſt, and when two years old, plant them in ſeparate pots, to move to ſhelter for two more winters, then let them be planted out in the full ground.

By Suckers,—The plants, after a few years ſtanding, ſend up ſuckers in tolerable plenty, which ſhould be taken off in ſpring, and planted in nurſery rows for two, three, or more years, to acquire ſtrength, then tranſplanted for good.

By Layers.—In autumn lay ſome of the young ſhoots of laſt ſummer, and they will be rooted in a year or two.

KÆMPFERIA, *Galangale.*

This genus conſiſts of low, herbaceous, flowery perennials of India, for the ſtove, adorned with radical, oval, and ſpear-ſhaped leaves, and monopetalous, tubular, ſix-parted flowers.

Claſs and order, *Monandria Monogynia.*

*Characters.*] CALIX, is obſolete, and placed above the germen. COROLLA, is monopetalous, with a long ſlender tube below, and ſix-parted above; three of the parts are ſpear-ſhaped, two are oval, and the loweſt is divided into two obcordate ſegments. STAMINA, one membranaceous ſuboval filament, and linear anthera, growing along the filament its whole length. PISTILLUM, an oval germen, ſimple ſtyle, and obtuſe ſtigma. PERICARPIUM, a roundiſh trilocular capſule, having many ſeeds.

There are but two ſpecies, both of low growth, and acaulous, i. e. having no ſtem; the leaves and flowers riſing directly from the root annually.

The ſpecies are;

[1]KÆMPFERIA *Galanga.*

*Galangale.*] Hath tuberous, thick, oblong, fleſhy roots; crowned with oval, cloſe-ſitting leaves, by pairs, four or five inches long, without foot-ſtalks, and between them cloſe-ſitting white flowers, with purple bottoms, growing ſingly.

[2]KÆMPFERIA *Rotunda.*

*Round Kæmpferia.*] Hath thick, fleſhy, ſwelling, roundiſh, cluſtering roots; ſending up ſpear-ſhaped leaves, ſix or eight inches long, near half as broad, on upright foot-ſtalks; and between them, immediately from the root, riſe whitiſh flowers, tinged with green, red, yellow, and purple centres.

Both theſe are perennial in root, but the leaves riſe annually from it in ſpring, and decay in winter.

They flower in ſummer; each flower is of one petal, tubulous below, but plain above, and divided into ſix parts; continue three or four weeks in beauty, but are never ſucceeded by ſeeds in England.

Both theſe plants muſt be potted in light rich mould, and always kept in the hot-houſe, giving plenty of water in ſummer, but more ſparingly in winter. They are propagated by

parting their roots in ſpring, juſt before they begin to puſh forth new leaves.

KIGGELARIA, *Kiggelaria.*

There is but one ſpecies, an ever-green ſhrub of Africa, retained here in green-houſe collections, for variety; and is a dioecious plant.

Claſs and order, *Dioecia Decandria.*

*Characters.*] CALIX, dioecious flowers, having monophyllous, five-parted cups. COROLLA, five ſpear-ſhaped, concave petals. STAMINA, ten ſmall filaments, and oblong antheræ. PISTILLUM, a roundiſh germen, five ſtyles, and obtuſe ſtigmas. PERICARPIUM, a globular, rough, unilocular capſule, having angular ſeeds.

The ſpecies is;

KIGGELARIA *Africana.*

*African Kiggelaria.*] Hath an upright woody ſtem, and purpliſh branches, growing fifteen or eighteen feet high; oblong, ſawed, alternate leaves; and dioecious, greeniſh-white flowers, in cluſters from the ſides of the branches; ſucceeded by globular rough fruit, the ſize of cherries, containing the ſeeds, which ſeldom ripen here.

This plant muſt be potted in rich garden-mould, and placed among the green-houſe plants, to have ſhelter in winter, managing it as other woody kinds.

It is propagated by ſeeds, layers, and cuttings, though both layers and cuttings root ſparingly.

Sow the ſeed in pots, and plunge them in a hot-bed, and when the plants are come up three or four inches high, plant them in ſeparate ſmall pots, plunging them alſo in the hot-bed till freſh rooted, then harden them to the full air the reſt of ſummer.

Layers ſhould be made in ſummer of the young ſhoots of the year.

And cuttings of the young ſhoots may be planted in ſpring in pots, and plunged in a bark-bed or other hot bed, and if cloſe covered with a hand-glaſs, they will more readily ſucceed.

KITCHEN-GARDEN, a principal diſtrict of garden-ground allotted for the culture of all kinds of eſculent herbs and roots for culinary purpoſes, &c.

A Kitchen-garden may be ſaid to be the moſt uſeful and conſequential part of gardening; ſince its products plentifully ſupply our tables, with the neceſſary ſupport of life, for it is allowed that health depends much on the uſe of a proper quantity of wholeſome vegetables, ſo that it is of much importance for every perſon poſſeſſed of a due extent of ground to have a good Kitchen-garden for the ſupply of his family. This garden is not only uſeful for raiſing all ſorts of eſculent roots and herbs, but alſo all the choicer ſorts of tree and ſhrub-fruits, &c. both on eſpaliers, wall-trees, and ſtandards; as the annual cultivation of the ground by manuring, digging, hoeing, &c. neceſſary in the culture of the eſculent herbs, alſo greatly encourages all ſorts of fruit-trees, preſerves them in health and vigour, ſo as always to produce large and fair fruit: for which reaſon, in the Kitchen-garden ſhould always be planted the choiceſt ſort of fruit-trees, particularly for walls and eſpaliers; likewiſe ſome ſtandards, if ſet a conſiderable way aſunder, ſo as not to ſhade the under-crops too much; and when the trees are judiciouſly diſpoſed, there will be almoſt equally the ſame room for the crops of herbaceous eſculents as without trees; ſo that this garden may be reckoned both as a Kitchen and fruit-garden.

As to the place of diſpoſition of this garden reſpecting the other diſtricts, if it is deſigned principally as a Kitchen and fruit-garden, diſtinct from the other parts, and there is room for choice of ſituation, it ſhould generally be placed detached entirely from the pleaſure-ground; alſo as much out of view of the habitation as poſſible, at ſome reaſonable diſtance, either behind it, or towards either ſide thereof, ſo as its walls or other fences may not obſtruct any deſirable proſpect either of the pleaſure-garden, park, fields, or the adjacent country; having regard, however, to place it, if poſſible, where the ſituation and ſoil is eligible, as hereafter illuſtrated; and if its ſituation is unavoidably ſuch as to interfere with the pleaſure-gardens, ſo as its walls may be thought diſagreeable to view, they may be ſhut out from ſight by intervening plantations of ſhrubs and trees.

But as in many places they are limited to a moderate compaſs of ground, in others have ſcope enough, and require but a moderate extent of garden; that in either caſe, have often the Kitchen, fruit, and pleaſure-garden all in one; having the principal walks ſpacious, and the borders next them of conſiderable breadth; the back part of them planted with a range of eſpalier fruit-trees, ſurrounding the quarters; the front

front with flowers and ſmall ſhrubs; and the inner quarters for the growth of the Kitchen-vegetables, &c.

*The proper Situation, Soil, Water, Extent, &c.*

As to ſituation, on this head we can only obſerve in general, that both high and low ſituations, if the ſoil is proper, will produce good crops of eſculent herbage and fruits; though a moderately low ſituation, by being leſs expoſed to the influence of cold and violent winds, may ſuit winter and early crops, both of herbs and trees, better than high-lying ground, provided, however, it is moderately dry, and not too retentive of moiſture in winter. A ſituation having a moderate ſlope is very eligible for this purpoſe, as in ſuch a ſpot there will not be any danger of water ſtanding, nor of being too wet at any ſeaſon; and if it ſlopes toward the South, it is a moſt deſirable ſituation, as it will not only be better defended from the cold northerly winds, but its expoſure or aſpect inclining to the ſun, we may always expect to have the earlieſt crops; or if, when the ſituation allotted for this garden is in ſome parts high, or a little ſloping, and others low and moiſt, it may be ſome advantage, as the high or ſloping ground will ſuit for early crops, and for wintering ſeveral ſorts of plants that are impatient of copious moiſture in that ſeaſon, ſuch as lettuce, &c. and the low ground will be eligible for late ſummer crops, as peas, beans, cauliflowers, tranſplanted lettuce, and ſeveral others. However, as to choice of ſituation and ſoil, this is practicable in large eſtates; but where perſons are limited to a moderate ſpace, they muſt be content with ſuch as nature affords; obſerving in this caſe, that if the natural ſoil is of a proper temperament and depth, we need not be under any great anxiety about the ſituation, if it is moderately dry, and not apt to be overflowed in winter; even in that caſe, it may be remedied, or greatly helped, by digging two or three long narrow canals, and from theſe ſome under-ground hollow drains, the earth from which will help to raiſe the contiguous ground higher, and the water in the canals will be convenient for watering the plants. Remarking that a ſituation too wet in winter ſhould be guarded againſt as much as the nature of the place will admit, for in ſuch land we can never have early crops, nor will the fruit-trees be proſperous.

With reſpect to ſoil, (ſee EARTH); the ſoil for a Kitchen-garden, of all others, requires to be naturally good, of depth enough for the growth of the large perpendicular eſculent roots, as carrots, parſneps, red beet, horſeradiſh, &c. alſo for the growth of fruit-trees, a very material article; ſo that the proper ſoil for theſe general purpoſes, ſhould, if poſſible, be from about a foot and a half to three feet deep or more; but much leſs than a foot and a half depth will be a great diſadvantage; ſo much depends upon the quality of the ſoil for a Kitchen and fruit-garden, that where there is ſcope of ground to chuſe from, we cannot be too cautious at firſt in fixing on a proper ſpot, where the ſoil is good, and depth enough, as above, before gravel, clay, chalk or other bad ſoils are come at, which ſhould always be more particularly attended to when deſigned to furniſh the ground with a choice collection of fruit-trees, either for the walls, eſpaliers, or ſtandards; for without a due depth of good earth, theſe will neither bear well, nor be of long duration.

Different ſorts of ſoils are met with in different parts, as loamy, clayey, ſandy, &c. A loamy ſoil either of a brown or black colour, is the beſt that can be for this purpoſe, more particularly a light ſandy hazel loam, which always works pliable at all ſeaſons, not apt to be too wet and cloggy at every ſhower of rain, nor bind in dry hot weather; this ſoil, however, although the moſt common ſuperficial earth in this country, is not common to all parts. A clayey, ſtrong, ſtubborn ſoil is the worſt of all earths, and muſt be mended by ſandy materials and coal-aſhes. A ſandy ſoil is common in many places, which if of a very light ſharp nature, it muſt be fertilized by plenty of rotten dung; and ſtrong earths where they can be eaſily procured.

It is obſervable that ground which conſtantly produces good crops of corn and graſs, is alſo proper for the growth of all eſculent herbs and fruit-trees.

Chuſe, however, the beſt ſoil you can, according to the ſituation and extent of your ground; and if it happens to prove unfavourable, art muſt aſſiſt; for if it is of a light ſandy nature, it may eaſily be mended, by adding ſtore of any kind of rotten dung; and if of a very light, ſharp, hungry tempera-

ment, earths of ſtronger ſubſtance, ſuch as loam, and the like, if it can be eaſily obtained, muſt be added occaſionally along with plenty of dung, working the whole with the natural ſoil of the garden; and ſhould your garden be of a clayey, cold, damp nature, add light materials, ſuch as any light ſandy ſoils; nothing is more proper than plenty of coal-aſhes, for opening and warming all tough, ſtubborn, cold ſoils; and theſe may be always procured in plenty almoſt every where, at an eaſy expence. See COMPOST, EARTH, &c.

Water is a very eſſential article in a Kitchen-garden in ſummer, to water all new tranſplanted plants, and others that cannot ſubſiſt without a due ſupply of moiſture during the drought of that ſeaſon; therefore, where practicable, one or more reſervoirs of of water ſhould be contrived in the moſt convenient part of the ground, either in baſons or narrow canals, and ſupplied with water from ſome contiguous ſpring, river, brook, pond, well, &c. See WATER.

The neceſſary ſpace of ground proper for a family Kitchen-garden, may be from about a quarter of an acre to ſix or eight, according to the extent and demand of the family, and the expence the proprietor would chuſe to beſtow on the making and general culture. A Kitchen-garden of an acre will nearly employ one man, eſpecially if it be furniſhed with wall and eſpalier trees to manage, and ſo in proportion to a garden of ſmaller or larger extent, a garden of the above ſize will produce a prodigious plenty of eſculent herbage and fruit, ſufficient at leaſt for a family of ten or fifteen perſons; but on large eſtates, where the family is conſiderable in proportion, three or four acres of Kitchen-garden may be neceſſary; and ſome very large families have them of ſix or eight acres extent.

*Fences for incloſing the Ground.*

With reſpect to fences for incloſing the ground, it is moſt neceſſary to have an effectual fence of ſome ſort around the Kitchen-garden, both for ſecurity of the produce, and to defend tender and early crops from cutting winds, and if wall-fences are uſed, they are alſo of the greateſt utility for training wall-trees, for producing the more delicate kinds of fruit, which do not acquire perfection in this country without ſuch aids.

Previous to fencing the ground, the proper ſhape or form for the garden is to be conſidered; the moſt eligible form for a Kitchen-garden, is that either of a ſquare, or oblong ſquare; but the figure may be varied, according as that of the ſituation admits; keeping, however, as near as poſſible to the ſquare, or oblong form, eſpecially if the ground is to be fenced with a wall for training fruit-trees; no other ſhape anſwers ſo well for that purpoſe; for trial having been made of circles, ovals, ſemi-circles, angles, &c. but none ſucceeded near ſo well as the ſquare form, with the walls built entirely ſtraight.

Different ſorts of fences are uſed for incloſing this ground, as walls, paling, and hedges.

But where wall-trees are intended, the beſt ſort of fence is a wall of brick or ſtone; but brick walls are conſiderably the beſt for training trees upon, for the joints of the brick-work being at ſhort regular diſtances, affords frequent opportunities for nailing the branches; beſides, the bricks themſelves will alſo often admit of the nails being driven into them; ſo that againſt brick-walls we may readily train trees in the moſt regular manner; but in default of bricks, and where ſtone-walls are intended, the ſtones ſhould be as regular as poſſible, and not too large, eſpecially in the front of the walls, that the joints may be at ſmall diſtances for the convenience of nailing, otherwiſe there will be an abſolute neceſſity of having a treillage of wood-work erected againſt the walls for nailing the branches to. See TREILLAGE.

Sometimes, to ſave expences in building brick or ſtone-walls, boarded fences, or paling is uſed, both as fences, and for training fruit-trees upon. When ſuch fences are intended for trees, the boarding ſhould be tongued and cloſely joined, edge to edge, and ſo as to form a plain or even ſurface, for the commodious training the branches.

In gardens where no wall-trees are intended, a hedge, or bank and hedge is a very proper fence, which may be ſo trained as to form both an effectual fence againſt men and beaſts, alſo to ſhelter particular parts of the ground for raiſing early crops; and a hawthorn hedge is the moſt proper ſort, though other ſorts may be uſed. See HEDGES.

No fencing, however, for a Kitchen-garden, where intended to have wall-trees, is equal to brick or ſtone walls, which is conſiderably

ſiderably ſtronger, warmer, and more durable than paling fences, and their natural warmth, together with their reflection of the ſun's heat, is the moſt effectual for the growth and ripening the more delicate kinds of fruit; but the brick walls are the warmeſt of all.

Either of theſe kinds of wall or paling-fences for fruit-trees, ſhould, where there is ſcope of ground, be ſo contrived as to have both ſides occupied with trees, which is effected by having a ſlip of ground taken in all round the outſide of the wall, or as far as may be convenient, about ten, twenty, or thirty feet wide, or more, incloſed with a bank and hedge (ſee HEDGES), or with any kind of paling, fencible againſt men and beaſts; which part, beſides its utility in affording an opportunity of planting the outſide of the wall, it will alſo be an addition to the Kitchen-ground, as it will ſerve for raiſing many ſorts of Kitchen-eſculents, and is often uſed as a ſort of nurſery, both for herbaceous and woody plants.

And in large gardens, where a great ſupply of wall-fruit is required, ſome croſs-walls may be run along the garden, at an hundred feet or more aſunder, but if more the better; both ſides of which may alſo be planted with trees, as obſerved of the boundary-wall.

The proper height for the walls, is from about eight to ten or twelve feet, but ten feet height will do tolerable well for moſt ſort of trees, provided you plant the trees at diſtance enough to have room to ſpread their branches horizontally each way; the walls, however, ſhould never be leſs than eight feet high. See WALLS.

Hot-walls for forcing by fire-heat, &c is often erected in large Kitchen-gardens; for an account of which, ſee FORCING FRAME and WALLS.

### *Preparing and laying out the Ground.*

The whole ground ſhould be regularly trenched two ſpades deep; obſerving if the ſoil is poor, or of bad quality, and wants amendment, either of dung, or any of the materials before mentioned, reſpecting the ſoil, it muſt be previouſly added, and trenched in betwixt the bottom and top ſpits, ſo as next year, when it comes to be digged again, the compoſt being well-rotted, will be worked up, and mixed with the natural ſoil. See DIGGING and TRENCHING.

Do not omit enriching and improving the borders for the wall and eſpalier-trees, by adding a conſiderable portion of rotten dung; and if the natural ſoil is not good, add alſo, if poſſible, ſome good loamy earth from the ſurface of a field or common, either to the whole, or rather than fail, a few barrows-full to each place where the trees are to ſtand; and improve the reſt afterwards by degrees at your convenience.

The ground muſt be divided into compartments for regularity and convenience. A border muſt be carried all round the boundary-walls, not leſs than four, but if ſix, eight or ten feet wide, the better, for the benefit of the wall-trees, that their roots may have full ſcope to run in ſearch of nouriſhment, for they generally run as far under ground as their branches extend in length, and by the annual digging and ſtirring the ground about them to ſome conſiderable breadth, greatly encourages the trees; hence the utility of having a broad border under the walls; next to this border a walk ſhould be continued alſo all round the garden, of due width, as mentioned below; then proceed to divide the interior parts into two, four, or more principal diviſions and walks, if its extent be large; firſt a ſtraight walk ſhould run directly through the middle of the garden; and another, if thought neceſſary, may be directed acroſs the ground, interſecting the firſt; and if the garden is of ſome conſiderable length, two, three, or more, ſuch croſs walks may be neceſſary; the width of the walks may be from about five to ten or twelve feet, in proportion to the extent of the garden; and each of the quarters ſhould be ſurrounded with a five or ſix feet wide border, and range of eſpaliers planted along towards the back-part of each border, ſo that every quarter will be incloſed with an eſpalier.

I would not, however, by any means adviſe dividing ſmall or moderate-ſized gardens into too many walks and ſmall quarters, eſpecially if they are to be ſurrounded with eſpaliers, which would render them too confined for the proper growth of culinary herbage; beſides it would be waſting too much of the ground in walks.

In one of the quarters a place ſhould be allotted for the melon-ground; that is, a place for making the hot-beds for raiſing early cucumbers, melons, and other tender plants, fixing on a ſpot for this purpoſe, full to the ſun from riſing to ſetting, ſheltered as much as poſſible from

from the northerly winds, and conveniently ſituated for bringing in the dung for the hot-beds.

This place, if not ſo ſituated as to be ſheltered by the walls, or other fences of the garden, will be of much advantage to incloſe it with a cloſe fence, either a reed-hedge, or paling; ſerving both to break off the winds, and by having a door to lock, will preſerve your crops more ſecure; theſe fences may be ſix or ſeven feet high in the back or north ſide, with both the ſide fences ſloping gradually to about five feet height in front; which ſhould always be loweſt to admit the ſun freely. See MELONARY.

With regard to the borders and walks of of this garden, the outer borders adjoining the walks ſhould be neatly formed, and the edges made firm and ſtraight, and the walks gravelled, or laid with other dry materials.

The edges of the borders are frequently planted with box, &c. eſpecially in gardens where the Kitchen and pleaſure-ground are all in one; ſometimes part are edged with underſhrubby aromatic herbs, as thyme, ſavory, hyſſop, and the like; but unleſs theſe are kept low and neat, they appear unſightly; ſome, however, uſe no planted edgings at all in proper Kitchen-gardens, only have the edge of the border made up even, treading it firm that it may ſtand, then cut it ſtraight by line; ſometimes along the top of this edging is planted a row of ſtrawberries, a foot or fifteen inches aſunder, they will bear plentifully, and have a good effect; obſerving to ſtring them ſeveral times in ſummer, to preſerve them neat and within due compaſs. See FRAGARIA.

The walks ſhould principally be laid with gravel, or good binding ſand, or nothing better than road-ſtuff, i. e. the wet ſoil of turnpike-roads, raked and ſhovelled up by the road-people in moiſt weather, in heaps; which being the ballaſt or ſtones uſed in repairing the roads, ground to pieces, and after having lain ſome time to dry, then brought in, it will form exceeding good walks for the Kitchen-garden; or, for want of either of the above materials, may uſe coal-aſhes, which, if the black colour can be diſpenſed with, will make a tolerably firm dry walk.

Sometimes graſs-walks are uſed, but theſe are rather improper for general uſe in Kitchen-gardens, eſpecially in ſuch parts of the garden where wheel-barrows are obliged to come often, which would cut and greatly deface them; beſides, they are apt to be wet and diſagreeable in all wet weather, and in winter; but if any are intended for variety and ſummers walking, they ſhould be only in ſome high dry part of the garden, and never let them be general, for beſides the afore-mentioned inconveniences, they are apt to harbour ſlugs and other crawling vermin, to the detriment of the adjacent crops.

The wall trees ſhould be planted at from fifteen to twenty feet diſtance, according to the ſorts. For peaches, nectarines, plums, and cherries, fifteen or eighteen feet is the proper diſtance; but for pears twenty feet is requiſite: obſerving to plant the choicer and more delicate ſorts on the beſt expoſures, ſo as to have the moſt ſun, as is expreſſed under their proper articles. Where practicable, always plant both ſides of the wall; and if you would have the walls covered as ſoon as poſſible, if the walls are high, may plant firſt dwarfs as the principal furniture, then half ſtandards and full ſtandards alternately between the dwarfs; and whilſt the dwarfs cover the lower part, the ſtandards furniſh the upper: but are to be afterwards taken away by degrees as the dwarfs grow up. See WALL-TREES.

The eſpaliers ſhould be planted in one range round each quarter, about five or ſix feet from the outer edge of the border, and from about fifteen to twenty-five feet aſunder, according to the ſorts of fruit-trees you plant. See ESPALIERS.

Within the eſpaliers in the quarters, you may plant ſome ſtandard fruit-trees of the choicer ſorts, but at thirty or forty feet each way diſtant, that they may not ſhade the ground.

Likewiſe in the quarters may be planted the ſmall kinds of fruit-ſhrubs, as gooſeberries, currants, and raſberries, in rows ſo as to divide the quarters into breaks of twenty or thirty feet wide, or more, placing the buſhes nine feet aſunder in each row, and if they are kept ſomewhat thin, and ſpreading the way of the rows, in the manner of an eſpalier, they will not incumber the ground, and will bear very plentiful crops of large fruit. See their *Culture*.

In many places, however, as we formerly noticed, there is but a ſmall compaſs of ground, or ſo limited as to be obliged to have the Kitchen, fruit, and pleaſure-ground all in one, or at leaſt often all within the ſame general incloſure; in which caſes, if any part of the ground is required for ornament,

ment, a portion of it next the houſe, may be laid out in a lawn or graſs-plat, bounded with a ſhrubbery; beyond which have the Kitchen-ground, ſeparating it alſo from the other with ſhrubbery compartments: the Kitchen-garden may alſo be laid out with ornamental walks and borders, having a broad border all round next the walls; and next this, a walk from five or ſix to ten feet wide, carried all round the garden; another directly through the middle; and next the walks have a border of ſix or eight feet wide, carried round each quarter or principal diviſion; which border, if made ſloping from the front to the back-part, will appear better than if quite flat; planting a range of eſpalier fruit-trees along the back of the border, ſo as immediately to ſurround the quarters, allotting the outſide of the border for flowers, and ſmall flowering ſhrubs, having the edge planted with box or thrift; and the walks neatly laid with gravel, or other materials before mentioned; the inſide within the eſpaliers to be the Kitchen-ground, dividing it, if thought neceſſary, by rows of gooſeberry, currant, and raſberry plants.

But when neceſſary to have the whole ſpace of the Kitchen-garden employed for real uſe, no ground ſhould be loſt in ornamental borders and walks: have a border all round the boundary-fence, four or five feet wide, except the ſouth borders, which ſhould be ſeven or eight feet broad, becauſe of its great uſe for raiſing early crops; and have a walk round the garden, not more than a yard wide; allowing the ſame width for the middle-walks, or ſo as to admit of wheel-barrows paſſing to bring in the manure, &c. and may either have a four feet wide border all round each quarter, next the walks, or not, as you ſhall think proper; laying the walks neatly with any gravelly materials, or with coal-aſhes, ſo as to have dry walking, and wheeling with a barrow in all weathers.

*General Culture of the Ground.*

With reſpect to the general culture of the Kitchen-garden; it conſiſts principally in a general annual digging; proper manuring; ſowing and planting the crops properly; keeping the ground clean from weeds; and watering the crops occaſionally in ſummer.

As to digging; a general digging muſt be performed annually in winter or ſpring, for the reception of the principal crops: alſo as often as any new crops is to be ſowed or planted; remarking that the general digging for the reception of the main crops in ſpring, I ſhould adviſe to perform it always by trenching either one or two ſpades deep, beſides the paring at top, though, except for ſome deep-rooting plants, as carrots, parſneps, &c. one ſpade depth may be ſufficient for common trenching, unleſs on particular occaſions, to trench as deep as the good ſoil admits, to turn the exhauſted earth to the bottom, and the freſh to the top to renew the ſoil. However, the trenching only one ſpade deep will much more effectually renew the ſoil than plain digging; and by paring the top of each trench, two or three inches deep into the bottom, all ſeeds of weeds on the ſurface, are thereby buried ſo deep, that they cannot grow; and I ſhould likewiſe adviſe that the general digging be performed principally in winter, or early in ſpring; but would be much the better if ſome conſiderable time before the ſeaſon for putting in the crops, that the ground may have the advantage of fallow, to meliorate and enrich it; and always let the ground be trenched in rough ridges, that it way receive all poſſible benefit from the ſun, air, rains, froſt &c. as it is ſoon levelled down for the reception of ſeeds and plants. Plain digging, however, may be ſufficient for ſlight crops, eſpecially in ſummer or autumn: after the ground has been trench-digged in the general winter or ſpring digging. See DIGGING and TRENCHING.

As to manure, any kind of dung, or compoſt of dung and earth is proper; and if this could be ſuited to the nature of the ſoil, it might be the greater advantage; that is, for ground of a ſtrong, heavy, cold nature, have for manure, a compoſt of well-rotted dung, aſhes, or any ſandy earths, and if light ſandy ground, have the moiſteſt ſort of dung, and heavy earths; ſee COMPOST, &c. Though any kind of well-rotted dung will ſuit as proper manure for almoſt every ſoil, but none better than the dung of old hot-beds, which is the moſt common manure for Kitchen-gardens, it being horſe, or ſtable-dung, firſt uſed in hot beds, where it becomes rotted to a buttery temperament, of an extremely enriching quality, and ſuits almoſt all kinds of ſoil and plants; but well-rotted neats-dung is alſo very good, particularly for light grounds, or a compoſt of every kind, as horſe-dung, neats-dung, hogs-hung, farm-yard dung, or mulch, aſhes, lime-rubbiſh, ſaw-

ſaw-duſt, rotten tan, having lain together till well rotted, will make excellent manure. See COMPOST, DUNGS, &c.

The manuring, or dunging the ground, may be neceſſary every year or two, for all crops being of an exhauſting nature in every ſoil, the vegetative vigour of the ſoils muſt be ſupported accordingly by a proper application of manure; but once every other year, however, the ground in general will want amendment; tho' where there is plenty of dung, give it as far as it will go every year, eſpecially for the principal crops, ſuch as onions, cauliflowers, cabbages, &c. for as the different crops exhauſts the ſoil, the addition of dung fertilizes and renews it; which when duly applied in proper quantities, the various crops will not only be much finer, but arrive to earlier perfection than in poor ſtarved ground.

All manuring ſhould generally be performed in winter or ſpring, to be dug in at the general annual digging; taking opportunity of froſty or very dry weather to wheel in the dung for the principal manuring, as it may then be performed more eaſy and clean without clogging, or ſpoiling the walks, or tearing up the ground; laying it in heaps by barrows-full at equal diſtances; afterwards ſpread it evenly, and dig it in one ſpade deep, as directed under the articles DIGGING and DUNGS.

In regard to cropping the ground, the proper ſituation for, and method of raiſing the different plants is fully exhibited under their reſpective articles; we will therefore only hint here, that it is eligible to allot the drieſt, warmeſt, and moſt ſunny ſituation for the early crops, and the other parts for the main crops.

The borders under the ſouth walls are proper for raiſing the earlieſt plants, as early peas, beans, radiſhes, ſpinach, lettuce, carrots, ſmall ſallad-herbs, kidney-beans, &c. The eaſt and weſt borders for ſucceſſion of early crops; and the north borders, which being ſhady and cool, ſerve for raiſing, and pricking out many ſmall plants, ſlips, and cuttings in ſummer; though all theſe borders in every expoſure may be made uſeful at all ſeaſons. The borders next the eſpaliers is proper for crops of ſmall plants at all ſeaſons of the year, as lettuce, endive, ſpinach, ſmall-ſallad herbs, ſtrawberries, and ſeveral others, both to ſtand, and for tranſplantation; and by keeping all the borders conſtantly well furniſhed with various eſculents, diſpoſed according to their different growths; they, beſides their uſefulneſs, effect a delightful variety.

The borders, however, under the walls are by moſt authors ſtrictly prohibited from the growth of culinary plants, on a ſuppoſition of their robbing the trees of nouriſhment; but as the ſouth borders being ſo valuable for raiſing many early crops, ſuch as radiſhes, lettuces, ſpinach, ſmall ſallad-herbs, carrots, peas, beans, kidney-beans, &c. they ſhould not be loſt; in ſhort all the other borders will be extremely uſeful in their turn; and when the borders are properly manured every year or two, I never found any material inconvenience ariſe to the trees. Peas and beans are particularly forbid to be growed on theſe borders, it is probable they might be better without them; but if only the lower growing ſorts are cultivated, and theſe in wide rows, and not too cloſe to the trees, there will be but little danger of their being injured by the crops, eſpecially as above hinted, if care is taken to renew the ſoil with plenty of rotten dung.

In the internal parts, called the quarters, ſhould always be raiſed the larger principal crops, ſuch as cabbages, cauliflowers, broccoli, coleworts, peas, beans, kidney-beans, onions, leeks, carrots, parſneps, beet, potatoes, turneps, artichokes, celery, general crops of lettuces, ſpinach, horſe-radiſh, &c.

As many of the eſculent plants ſucceed beſt in rows, ſuch as peas, beans, cauliflowers, and all the cabbage kinds; tranſplanted lettuces, endive, potatoes, artichokes, Jeruſalem-artichokes, celery, and ſome others, particular regard is requiſite, that the rows are at a proper diſtance for the plants to have full ſcope to grow, as directed for each ſort under their proper heads; and would adviſe that all the tall growing ſorts, as peas, beans, kidney-beans, &c. have their rows ranging ſouth and north, if poſſible, that the ſun may ſhine on each ſide of the rows in its turn, as well as on the ground between the rows; both of which is of more advantage to the crops than may be generally imagined, for when the rows range eaſt and weſt, one row ſhades another, ſo that when the plants grow up, they cannot all receive an equal benefit of the ſun and air.

The great art in cropping a Kitchen-garden, is to make the moſt of every part of the ground, where neceſſary, by having every part

part well occupied, and as many crops annually as poſſible; the Kitchen-gardeners about London are very expert at this; they crop their ground ſo full, in ſuch regular order, often ſeveral crops coming forward at a time in the ſame ground, ſo contrived according to the growth of each ſort, that as one crop is going off, another is coming on ready to ſucceed it, and after that another; ſo that the ground is often in full crop great part of the year; the method of which is generally hinted in the culture of the reſpective ſorts under their proper heads.

With regard to the methods of ſowing and planting the different crops, ſome are ſowed in drills, ſome by broad-caſt on the ſurface, and the ſeeds either raked in, or the earth ſpread or ſifted over them; and as to planting out the different plants, it is moſt commonly done by dibble, and ſome ſorts in drills or trenches, as practiſed for aſparagus; ſee DRILL-SOWING, SOWING-SEED, PLANTING, TRANSPLANTING, DIBBLE, HOE, &c.

Deſtroying weeds is a moſt neceſſary culture in the Kitchen-garden, and which muſt be very particularly attended to in ſpring and ſummer, for the ſucceſs of the crops greatly depends upon that work; it may be performed both by hand and hoe, occaſionally; hand-weeding is proper for all cloſe-growing ſmall plants, that either do not require thinning at all, or are only to be thinned by degrees; but by hoeing, in many caſes where the plants ſtand wide in rows, the broad hoe muſt be applied, both as the moſt expeditious method of killing the weeds, and the moſt effectual for the benefit of the plants, by ſtirring the earth about them; likewiſe ſmall hoeing is effectual for many ſmall plants that require thinning, and are deſigned to be thinned either in part, or hoed out at once to their due diſtances, ſuch as onions, carrots, parſneps, beet, turneps, &c. ſee HOEING. Obſerving in either mode of deſtroying weeds, always proceed to it time enough before the weeds begin to ſpread much, or are above an inch high, then the work may be performed with eaſe and expedition, and to the great benefit of the crops, by having the weeds timely deſtroyed; always chuſing dry weather for deſtroying weeds by hoe; and in hoeing between plants in rows, ſuch as peas, beans, kidney-beans, cabbages, cauliflowers, &c. always in in the firſt and ſecond hoeing draw a little earth up about their ſtems or ſhanks, which will greatly ſtrengthen the plants, and forward their growth.

The utmoſt attention is neceſſary never to ſuffer weeds to ſtand to perfect their ſeeds in any part, whether in crop or vacant, or on dung-hills, or compoſt heaps, as they would lay the foundation of ſeveral years trouble to extirpate them, for as in digging or hoeing the ground, ſome of the ſeeds would be buried near the ſurface, others much deeper, at every time of ſtirring the earth a freſh crop of weeds would ariſe from the ſame ſeeds, which verifies the ſaying, "One year's ſeeding, makes ſeven years weeding."

When weeds, however, are unavoidably ſuffered to grow large, or greatly advanced towards ſeeding, and are pulled up, or hoed down, let them, if poſſible, be carried off the ground, as many ſorts will often flower and perfect their ſeeds as they lie, particularly the downy-ſeeded kinds.

And with reſpect to root-weeds, i. e. thoſe with perennial roots, ſuch as bear-bind, couch-graſs, &c. the roots of which, and all others particularly of the like creeping growth, ſhould be carefully picked out, at every time of digging the ground, for the leaſt bit will grow and greatly increaſe; and in ſpring or in ſummer, as often as they ſhoot above ground, ſhould be pulled up, or where the hoe can come, deeply hoed, which if often repeated in dry weather, will greatly diminiſh them.

Watering the Kitchen-garden is only neceſſary in warm dry weather, to particular plants, more eſpecially to all thoſe newly tranſplanted; this in particular ſhould never be omitted, where practicable, for by giving each new-ſet plant directly ſome water, it ſettles the earth cloſe about their roots, they ſooner ſet to growing freely, and eſtabliſh themſelves firmly; and in hot dry weather, the watering ſhould be repeated every day or two for a week, till the plants have taken new root, and ſet to growing afreſh. Watering is alſo often requiſite in dry weather in the latter part of ſpring and during the ſummer ſeaſon, to beds of new-ſowed ſmall ſeeds; alſo after they come up, if the dry hot weather continues. Some ſorts of plants require continued occaſional waterings throughout the ſpring and ſummer ſeaſons, ſuch as all plants in hot-beds, as cucumbers, &c. as directed under the reſpective articles. In performing the watering, that for new tranſplanted plants

in wide rows, is commonly performed with the roſe, or the head of the ſpout of the pot off, giving it only juſt about each plant; though if all the ground is occaſionally watered, it will be the more beneficial to the plants. However, where the plants ſtand cloſe, either tranſplanted, or ſeedlings in the ſeed-bed, the watering ſhould be performed with the head of the pot on, giving it all over the plants, ground and all; obſerving in watering beds of ſmall ſeeds, or ſmall ſeedling plants, not to water too heavy or haſtily, leſt it waſh the ſeeds or plants out of the ground.

All general watering in ſummer, in hot ſunny weather, ſhould be performed principally in a morning or afternoon, that the moiſture may have time to ſoak to the roots of the plants before it is exhaled by the ſun's heat.

Neatneſs ſhould alſo be obſerved in the Kitchen-garden as well as in the pleaſure-ground, though not with that elegance as neceſſary in the latter; only a common uſeful neatneſs; for a well kept Kitchen-garden is to many as agreeable to walk in as the fineſt flower-garden; keep, therefore, all the walks particularly, and the principal outward borders clean from weeds, and all manner of rubbiſh, not ſuffering the decayed uſeleſs ſtalks and leaves of plants to remain; the ſame ſhould alſo be obſerved of the quarters or internal diviſions, clearing off all decayed cabbage-leaves, decayed peas and bean-ſtalks, artichoke-leaves, and other large rubbiſhy matter, which, beſides their littering appearance, ſome ſorts, ſuch as the decayed leaves of all the cabbage kinds, artichokes, &c. are apt to emit diſagreeable ſmells, and harbour ſlugs and other crawling vermin; ſo ſhould always be cleared off, eſpecially in gardens where company often walk.

And as crops are cleared off the ground, always broad-hoe it to cut up all the weeds, and if the weeds are large, it is proper to rake them off, eſpecially if it is like to be wet weather, but if dry and ſunny they will ſoon die.

In autumn and winter as the ground becomes vacant from crops, manure ſuch as require it, and trench the ground up in ridges, previous to ſpring cropping, for it greatly improves all ground to lie thus expoſed to the weather ſome months before it is ſowed or planted.

*Kitchen-garden Plants.*

KITCHEN-GARDEN PLANTS. Having given directions above for the making and general culture of the Kitchen garden, a liſt of the principal plants neceſſary to furniſh ſuch gardens, will, we preſume, be proper in this place; which notwithſtanding their being all fully treated of under their reſpective genera, yet by collecting them into one point of view, with ſhort hints of their method of propagation, will greatly aſſiſt the memory of every one, in furniſhing his garden at the proper ſeaſon.

We will exhibit each ſort under its generical botanic name, viz.

AGARICUS *campeſtris*.—Field agaric, or muſhroom. Propagation by ſpawn of the root, running in lumps of earth or dung. Autumn the proper ſeaſon.

ALLIUM, garlick, onion, leek, &c. The ſorts are:

ALLIUM *ſativum*, manured garlick, of which there are—large white garlick——red garlick. Propagation by the cloves of the root.

ALLIUM *ſcorodopraſum*, rocambole. Propagation by the root and bulbs from the ſtalk.

ALLIUM *cepa*, the onion—common oval Straſburgh onion—great oval Portugal onion—flat white Spaniſh onion—flat red Spaniſh onion—ſilver-ſkinned onion—bulbleſs-rooted Welſh onion. Propagation of all by ſeed annually.

ALLIUM *ſchænopraſum*, chives, or cives. By dividing the roots.

ALLIUM *aſcalonicum*, eſcalot, or ſhallot. By off-ſets of the root.

ALLIUM *porrum*, the leek—broad-leaved London leek—narrow-leaved leek. By ſeed annually.

ANETHUM, *dill*, &c. conſiſting of the following ſpecies.

ANETHUM *graveolens*, common dill. By ſeed annually.

ANETHUM *fœniculum*, fennel——light-green-leaved fennel—dark-green fennel——ſweet-ſeeded fennel. By ſeed, alſo by ſliping the old roots.

ANETHUM *finochia*, or Italian fennel. By ſeed annually.

ANGELICA *ſativa*, or *archangelica*—common angelica. By ſeed annually.

APIUM, parſley, celery, &c. conſiſting of the following ſorts:

APIUM,

APIUM *petroſelinum*, parſley—common plain-leaved parſley—curled-leaved common parſley—broad-leaved, or large-rooted parſley; the two former for their leaves, and the latter for its root. All raiſed by ſeed in ſpring.

APIUM *dulce*, celery—common upright celery—upright celery, with ſolid ſtalks——turnep-rooted ſpreading celery—ſmallage, or wild, rank-taſted celery.

ASPARAGUS *officinalis*, common aſparagus. By ſeed, and once raiſed the roots abide for years.

ATRIPLEX *hortenſis*. Garden orach—white-leaved garden orach—green orach—purple orach. By ſeed annually.

BETA *vulgaris*. The beet, of which there are;

BETA *cicla*, common culinary beet——green-leaved culinary beet——white beet——chard, or great white Swiſs beet. By ſeed annually.

BETA *ruba*, red beet—large, long, red-rooted beet—turnep-rooted red beet——red-rooted beet, with green leaves—pale-red beet; but thoſe with dark-red leaves and roots are the only ſorts for uſe. By ſeed annually.

BORAGO, *borage*. Some varieties. All raiſed by ſeed annually in autumn or ſpring.

BRASSICA, the cabbage, cauliflower, broccole, turnep, &c. The ſorts are:

BRASSICA *oleracea (Sylveſtris)* the cabbage, of which there are:—ſmall early ſummer cabbage—dwarf early ſugar-loaf-ſhaped cabbage——large, hollow, ſugar-loaf cabbage——early Ruſſia cabbage——common round white cabbage——long-ſided hollow cabbage——oval hollow cabbage—flat-topped cabbage—muſk-ſcented cabbage—giant cabbage—red cabbage. All by ſeed annually in ſpring and autumn, for uſe all the year.

BRASSICA *ſabanda*, ſavoy cabbage——common green curled ſavoy-——large green Dutch ſavoy—yellow ſavoy. By ſeed annually in ſpring, for autumn and winter uſe.

BRASSICA *laciniata*, laciniated, and other open-leaved cole—green curled borecole——red curled borecole——thick-leaved curled borecole—finely-fringed borecole——broad, erect, curled-leaved Siberian borecole, or Scotch cole, or kale, red and green—common plain-leaved green colewort; none of theſe ever cabbage, but always remain open and looſe quite to the heart; are remarkably hardy, and proper for winter uſe; all raiſed by ſeed annually in ſpring and ſummer.

BRASSICA *caulo-rapa*, turnep-cabbage—turnep-cabbage, with the turnep above ground—with the turnep under ground. By ſeed.

BRASSICA, *cauliflora*, the cauliflower—early cauliflower—late cauliflower. By ſeed annually in ſpring and autumn.

BRASSICA *Italica*, Italian *braſſica*, or broccoli—early purple broccoli—late large purple broccoli, comprehending ſome varieties, with blue, brown, green, and yellowiſh heads—white, or cauliflower-broccoli—black broccoli. All by ſeed in ſpring and beginning of ſummer, for autumn, winter, and ſpring uſe.

BRASSICA *rapa*, the turnep——early Dutch turnep—white round turnep—green-topped turnep—red-topped turnep——yellow turnep—oblong white turnep—long white-rooted French turnep—round purple French turnep. By ſeed in ſpring and ſummer, for uſe moſt part of the year.

CALENDULA *officinalis*, common officinal marigold, ſeveral varieties. By ſeed annually in ſpring, ſummer, or autumn.

CICHORUM *endivia*, endive—green curled endive——white curled endive—broad-leaved Batavia endive. By ſeed annually in ſummer, from May till July, for autumn and winter ſervice.

COCHLEARIA *armoracia*, horſe-radiſh. By pieces of the roots in ſpring, for uſe moſt part of the year.

CRAMBE, ſea-colewort. By ſeed in ſpring, but once raiſed the roots remain for years, ſending up ſhoots for uſe in ſpring and ſummer.

CUCUMIS, the cucumber and melon. The ſorts are:

CUCUMIS *ſativa*, the cucumber—early ſhort prickly cucumber—early cluſter-cucumber—long, green, prickly cucumber—long, white, prickly cucumber——long, ſmooth, green, Turkey cucumber——large, ſmooth, white cucumber—large, ſmooth, green, Roman cucumber. All by ſeed annually in ſpring and ſummer.

CUCUMIS *melo*, the melon——Romana melon——Cantaleupe melon; of each ſome varieties, and ſeveral other ſorts; ſee their *Culture*. By ſeed annually in ſpring.

CUCURBITA, the gourd and water melon, of each different ſorts; ſee CUCURBITA. By ſeed annually in ſpring.

CYNARA, artichoke and cardoon. The ſorts are:

CYNARA *ſcolymus*, common artichoke, of which are—globular-headed, red Dutch artichoke.

choke—oval-headed, green French artichoke. By ſuckers from the ſides of the old plants in ſpring.

CYNARA *cardunculus*, the cardoon. By ſeed annually in ſpring.

DAUCUS *carota*, the carrot—orange-coloured carrot—red carrot—yellow carrot—white carrot. By ſeed annually in ſpring, ſummer, and autumn; for uſe moſt part of the year.

HELIANTHUS *tuberoſus*, tuberous ſunflower, or Jeruſalem artichoke. By pieces of the root in ſpring.

HYSSOPUS *officinalis*, common officinal hyſſop. By ſeed in ſpring, and by ſlips and cuttings of its branches.

LACTUCA, lettuce—early green cabbage-lettuce—white cabbage-lettuce—brown Dutch cabbage-lettuce——great admirable cabbage-lettuce—green and white ball-cabbage-lettuce—green coſs-lettuce—white coſs-lettuce—black coſs-lettuce—ſpotted Allepo coſs-lettuce—brown Sileſia lettuce—imperial lettuce—red capuchin lettuce—green capuchin lettuce—curled lettuce. All by ſeed annually in ſpring, ſummer, and autumn; for uſe moſt part of the year.

LAVANDULA, lavender. The ſorts are:

LAVANDULA *ſpica*, ſpike-flowered common lavender——common narrow-leaved—broad-leaved—blue flowered—white-flowered—and dwarf lavender. By ſlips in ſpring.

LAVANDULA *ſtœchas*, ſtœchas, or French lavender. By ſlips or cuttings, and by ſeed.

LEPIDIUM *ſativum*, garden-creſs—common ſmall-leaved—broad leaved——curled-leaved. By ſeed at different times of the year, according as the plants are wanted.

MELISSA *officinalis*, baum. By dividing the roots in ſpring or autumn.

MENTHA, mint, penny-royal, &c.

MENTHA *viridis*, green common ſpear-mint—curled-leaved ſpear-mint—variegated ſpear-mint. By dividing the roots, by young plants, and by cuttings of the ſtalks in ſpring.

MENTHA *piperita*, pepper-mint. By roots and plants, &c. like the former.

MENTHA *pulegium*, penny-royal. By dividing and ſlipping the plants, as for themint

OCYMUM *baſilicum*, baſil. Several varieties, ſee OCYMUM. By ſeed in ſpring.

ORIGANUM, marjoram—common, wild, perennial pot-marjoram——winter perennial ſweet-marjoram—marjorana, or annual ſweet-marjoram. By ſeeds in ſpring, and the two former alſo by ſlipping the roots.

PASTINACA *ſativa*, parſnep. By ſeed annually in ſpring, for winter uſe.

PHASEOLUS *vulgaris*, common kidney-bean, which may be divided into two claſſes, —dwarfs and runners.

——— *Dwarfs*, are—early white—early yellow—liver-coloured—ſpeckled dwarf—Canterbury white dwarfs—Batterſea white dwarf—large white dwarf——cream-coloured dwarf—black dwarf—ſparrow-egg dwarf—amber-ſpeckled dwarf. All by ſeed annually at different times from April till Auguſt.

——— *Running kinds*—ſcarlet runner, and white variety—large Dutch runner—Batterſea white runner—Negro runner—variable runner. By ſeed like the former.

PISUM, the pea—Charlton pea—golden Charlton—earlieſt golden Charlton——long Reading hotſpur—Spaniſh morotto——green nonpareil—early dwarf marrowfat——large marrowfat—green rouncival, or union——white rouncival—Ledman's dwarf pea—ſmall ſugar-pea—large ſugar-pea—cluſter-pea——crown-pea—egg-pea——ſickle-pea. All by ſeed annually, at different times from October till June.

PORTULACA *oleracea*, purſlane——green purſlane—golden purſlane. Both by ſeed, in April and May.

POTERIUM, *ſanguiſorba*, burnet. By ſeed and parting the roots.

RAPHANUS *ſativus*, the radiſh——ſhort-topped early radiſh—long-topped radiſh——deep-red radiſh—pale-red, tranſparent, mild radiſh—ſalmon-coloured radiſh—ſmall white turnep-rooted radiſh—large, white, turnep-rooted, Spaniſh radiſh——large, black, turnep-rooted, Spaniſh radiſh. All the ſorts by ſeed at different times from Chriſtmas till July or Auguſt; but the latter for winter uſe.

ROSEMARINUS, roſemary, ſome varieties. By layers, ſlips, and cuttings, in ſpring.

RUMEX *acetoſa*, ſorrel——common long-leaved ſorrel—round-leaved French ſorrel—barren ſorrel. By parting the roots, and the firſt ſort alſo plentifully by ſeed.

RUTA, *graveolens*, rue; ſeveral varieties. All by ſlips and cuttings.

SALVIA, ſage, clary, &c. The ſorts are:

SALVIA *officinalis*, common ſage——red ſage——broad-leaved green ſage——narrow-leaved green ſage—broad leaved hoary ſage—ſage of virtue—wormwood ſage, &c. By ſlips in April and May.

SALVIA *ſclarea*, clary. By ſeed annually.

SATU-

SATUREJA, ſavory—winter perennial ſavory—ſummer annual ſavory. Both by ſeed, and the former alſo by ſlips.

SCANDEX *cerefolium*, chervil. By ſeed annually in Auguſt, for winter and ſpring uſe.

SCORZONERA, *ſcorzonera*, an eatable root, raiſed from ſeed in ſpring.

SINAPIS, muſtard—white muſtard—black muſtard—field, or wild muſtard: the former to uſe young in ſallad, and the two laſt for their ſeeds, to make muſtard. All by ſeed in ſpring, or if for ſallads, at any time of the year.

SIUM *ſiſarum*, ſkirret; an eatable root. By off-ſets commonly, of the root, alſo by ſeed.

SOLANUM, night-ſhade, furniſhes the potatoe and tomatoe. The ſorts are:

SOLANUM *Tuberoſum*, tuberous-rooted ſolanum, or potatoe—common round red potatoe—early round red—oblong red—deep-red—pale-red—rough red—white kidney-ſhaped—red-ended white kidney—white round—white cluſter—prolific American. By pieces of the roots, or the roots whole, in ſpring.

SOLANUM *lycoperſicum*, tomatoe, or love-apple; ſome varieties. All by ſeed annually.

SPINACIA, ſpinach—round thick-leaved, or ſmooth-ſeeded—triangular-leaved, or prickly-ſeeded; the former for ſpring and ſummer crops, the latter to ſtand the winter. Both by ſeed annually in ſpring, ſummer and autumn, for uſe moſt part of the year.

TANACETUM *vulgare*, common tanſey. By parting the roots in ſpring or autumn.

THYMUS *vulgaris*, common thyme; having ſome varieties. By ſeeds in March and April; alſo by ſlips of the root and branches, and by cuttings; but ſeed is the only way to raiſe a quantity of the common ſort; and the other methods to continue the varieties.

TRAGOPOGON *porrifolium*, ſalſafy; an eſculent root. By ſeeds annually in ſpring.

TROPÆOLIUM, Indian creſs, or naſturtium—naſturtium minus—naſturtium majus; their flowers for garniſh and ſallads, and their ſeeds to pickle. Raiſed annually from ſeeds in ſpring.

VALERIANA *locuſta*, corn-ſallad, or lambs-lettuce. By ſeed in ſpring and autumn.

VICIA *faba*, the bean—early Mazagan—early Liſbon—long-pod—Turkey long-pod toker bean—Sandwich bean—Windſor bean—white-bloſſomed—red-bloſſomed—Spaniſh bean—nonpareil bean—dwarf ſan bean, very low. All of them by ſeed annually, at different times from October until June.

For a particular deſcription, and method of culture of all theſe Kitchen garden plants, ſee each under its reſpective genus as above.

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# L.

LABIATUS *Flos*, a lip-flower; a monopetalous irregular flower, divided into two principal diviſions, reſembling two lips.

Labiated, or Lip-flowers, make part of the ringent, or grinning tribe; ſee COROLLA RINGENS; and of which are moſt of the verticillate plants, as baum, mint, hyſſop, ſage, clary, marjoram, ſavory, lavender, thyme, and many others, moſt of which produce their flowers in a verticillus, or whirls round the ſtalks and branches. See VERTICILLUS.

LABYRINTH, a ſort of wilderneſs-plantation, abounding with hedges and walks, diſtributed into many winding and intricate turnings, leading to one common centre, extremely difficult to find out; deſigned in large gardens by way of amuſement.

A Labyrinth is formed with hedges commonly in double rows, leading in various intricate turnings, backward and forward, with

with intervening plantations and gravel walks alternately between hedge and hedge; and the great aim is to have the walk contrived in ſo many mazy, intricate windings to and fro, that a perſon may have much labour and difficulty to find out the centre of the Labyrinth, by meeting with as many ſtops and diſappointments as poſſible; for he muſt not croſs or break through the hedges; ſo that in a well-contrived Labyrinth a ſtranger will often entirely loſe himſelf, ſo as neither to find his way to the centre, nor out again the way he came in.

Theſe Labyrinths are rarely introduced now in our modern garden deſigns; and ſcarce to be ſeen, but in ſome old noble gardens.

As to the plan of them, it is impoſſible to expreſs it with any propriety by words, no farther than the above hints; but there are different plans, and the contrivance of them muſt depend on the ingenuity of the deſigner.

But as to their hedges, walks, and trees; the hedges are uſually of hornbeam, but may alſo be of beech and elm, or any other that can be kept neat by clipping, ſee HEDGES. The walks ſhould be five feet wide at leaſt, laid with gravel and neatly rolled; and the trees and ſhrubs to form a thicket of wood between the hedges may be any of the hardy kins of the deciduous tribe interſperſed, if you pleaſe, with ſome ever-greens; and in the middle of the Labyrinth ſhould be a ſpacious open for the centre.

Sometimes ſmall Labyrinths are formed with box-edgings, and borders for plants, and alleys for walking, in imitation of the large ones, and which have a good effect in ſmall gardens.

LACTESCENTIA, milkineſs; Lacteſcent plants, are ſuch as abound with a milky juice, ſuch as lettuce *(lactuca)*, dandelion, and many others.

The colour of the juice in queſtion, is white in moſt plants, though in ſome it is yellow, in others red; moſt Lacteſcent plants are ſaid to be poiſonous, except thoſe with compound flowers, which are of an innocent quality.

Among the poiſonous ſorts may be reckoned, *euphorbia*, ſumach, celandine, caſſada, cardinal-flower, ſwallow-wort, apocynum, &c.

Among thoſe innocent in their quality, are all the ſorts of the *lactuca ſativa*, or cultivated lettuce, ſalſafy, dandelion, &c.

LACTUCA, Lettuce.

One ſpecies only of this genus furniſhes all our valuable varieties of Lettuce; all of which are herbaceous annuals of great eſtimation for ſallads, and many culinary purpoſes; are in greateſt perfection in ſummer, but may be continued moſt part of the year; though being rather impatient of ſevere froſt, cannot be obtained in any tolerable perfection in winter, unleſs planted under ſhelter of frames, &c. their cabbaged inner leaves are the uſeful parts, which having obtained perfection, the plants ſoon after ſhoot up tall branchy ſtalks, terminated by compound yellowiſh flowers.

Claſs and order, *Syngeneſia Polygamia Æqualis*.

*Characters.*] CALIX, a compound flower, having a ſcaly imbricated general cup. COROLLA, many tongue-ſhaped hermaphrodite flowers, placed imbricatum. STAMINA, five ſhort filaments, and cylindric antheræ. PISTILLUM, an oval germen, ſlender ſtyle, and two reflexed ſtigmas. PERICARPIUM, none. SEMINA, a ſingle compreſſed ſeed to each floret, crowned with a ſimple down, ſitting on the receptacle.

The cultivated ſpecies of Lettuce is;

LACTUCA *Sativa*.

*Cultivated Lactuca, or Common Lettuce.*] Hath a long taper root, crowned by many large roundiſh, or oblong oval, cloſe-ſitting leaves, in ſome ſpreading, others erect, the inner ones contracting gradually, and form a cloſe, firm, cabbaged head; and from the centre of which riſes the flower-ſtalk, branching two or three feet high, having all the branches terminated by ſmall compound yellow flowers, ſucceeded by ſmall, flat, downy ſeeds, in autumn.

The varieties of this ſpecies are very numerous, but the real valuable ſorts now commonly cultivated, do not amount to above ſix or ſeven; and it is better to cultivate only a few of the known good kinds, than to confuſe the ground with a great multiplicity of ſorts, unleſs required merely for variety. We will, however, exhibit a liſt of the principal, and leſs material varieties ſeparate.

*Principal Varieties.*] Hardy green cabbage-lettuce—white cabbage-lettuce—great, admirable, white cabbage lettuce, very large—brown Dutch cabbage-lettuce—green coſs-lettuce—white coſs-lettuce—brown Sileſia-lettuce. All the cabbage kinds are of ſpreading

ing growth, but cabbage firmly; and the other ſorts grow upright, and alſo cabbage very large.

All theſe ſeven varieties are excellent Lettuces for general culture, though the green, and the white coſs kinds, are in moſt eſteem for the general ſummer crops; and the green coſs rather excells all the coſs kinds for ſize and goodneſs; but as all the above varieties both of the cabbage and coſs kinds cabbage exceeding fine, a few of each is worth culture in every garden for general uſe; but rather moſt of the coſs kinds for ſummer, and moſt of the others for autumn and winter; and the hardy cabbage, brown Dutch, and green coſs, are proper alſo to ſtand the winter for ſpring ſervice; but if thought proper ſome of each ſort may be uſedfor either or all of theſe ſeaſons, except the great admirable Cabbage-lettuce, which being rather tender, at leaſt, does not ſucceed for early nor late crops, ſo ſhould be ſowed principally in April and May, and will cabbage remarkably fine in July and Auguſt. All the other varieties, however, may be ſowed any time in ſpring, ſummer, and autumn. See their *Propagation, &c.*

*Leſs material Varieties.*] Small, early, green ball-cabbage Lettuce—white ball cabbage Lettuce: both theſe are varieties of the common green and white Cabbage-lettuce—green capuchin Lettuce—red capuchin Lettuce—imperial Lettuce, large—ſpotted Coſs-lettuce——black Coſs-lettuce, large and ſomewhat ſpreading. All theſe varieties cabbage to firm heads; though inferior to the former claſs of varieties for general uſe; but their culture is all the ſame as the others; and, if required for variety, may be raiſed abundantly by ſeed in ſpring, ſummer, and autumn. See their *Propagation.*

All the above varieties of Lettuce in each claſs, are tolerable permanent, eſpecially if care is taken to ſave ſeeds only of the very beſt of each ſort; and the different ſorts always as far diſtant from each other as poſſible, that their *farina* may not mix and cauſe a degeneracy, for it is by not ſtrictly obſerving this that ſo many are diſappointed in their crops, by having Lettuce not of the approved ſorts, and thoſe often ſmall and inſignificant, running to ſeed before they have half cabbaged; therefore great regard ſhould be had in the choice of the plants for ſeed, according to the above hints, and as directed under the article of *ſaving the ſeed*, by which you may depend on continuing plants of the approved kinds in the utmoſt perfection.

The plants in general may be conſidered both as annuals and biennials, for thoſe ſowed in ſpring and ſummer, attain perfection, run up to ſeed, and periſh the ſame year; but the autumn ſowings will ſtand all winter until ſpring following, when they attain perfection, then ſhoot up for ſeed, and periſh root and all.

All the ſorts are hardy enough to grow in any common ſoil of a kitchen-garden, in a free ſituation open to the ſun and air; but being rather impatient of ſevere froſt and wet ſoils in winter, ſhould have a dry warm ſituation in that ſeaſon, and ſome ſhould be kept under frames and other ſhelters, the more effectually to preſerve, and forward them for uſe during that ſeaſon and ſpring-time.

Their uſe is principally for ſallads, when arrived to full growth and cabbaged, that the inner leaves become blanched, criſp, and ſweet, otherwiſe would eat tough and bitter taſted; but ſometimes alſo the young open plants of the cabbage Lettuces are uſed in ſpring, till the other general crops arrive to perfection: the white cabbage being the moſt eligible for this uſe, as they eat ſweeter than any other ſorts while young and open. Quite young open Lettuces are alſo often uſed as ſmall ſallad herbs, ſowing them thick in rows, like creſſes, &c. and gather them for uſe in the ſame manner as for thoſe plants; but this mode of culture is more particularly practiſed in winter and ſpring. Lettuces, however, in general eat no way ſo criſp, ſweet, and palatable, as when fully cabbaged; and are themſelves ſufficient for a ſallad, if thought proper, without the addition of other herbs. The fully cabbaged Lettuces are alſo excellent for ſtewing and for ſoups, and other culinary uſes.

The ſeaſon of Lettuces may be continued moſt part of the year, by different ſowings; but their principal ſeaſon of greateſt perfection is June, July, and Auguſt, in which months the ſpring-ſowed plants arrive to a large ſize, and finely cabbaged. However, by ſeveral different ſowings in ſpring, ſummer, and autumn, they may be had cabbaged leſs or more the year round: the ſpring ſowings furniſh the main ſummer crops, the ſummer ſowing for autumn uſe; and the late autumnal ſowing, ſtand the winter, and ſome of which will be fit for uſe in that ſeaſon, and if occaſionally ſheltered, ſome will be tolerably,

tolerably cabbaged; and others arrive to perfection in ſpring and beginning of ſummer, before the ſpring-ſowed plants come in.

*Propagation, and Seaſon for ſowing all the Sorts.*

The propagation of all the ſorts of Lettuce is by ſeed annually, and that to continue a regular ſucceſſion of them for uſe at all times of the year, ſix or eight different ſowings, at leaſt, is neceſſary; but the principal ſowing-ſeaſon for the main crops, is ſpring, in February, March, April, and May; which will furniſh a conſtant ſupply of good Lettuces from May till Auguſt or September; and by latter-ſowings they are continued longer accordingly: as the plants, however, of all the ſowings, after having attained their proper ſize, and fully cabbaged, they ſoon after run up to ſeed, ſo that to inſure a continued ſucceſſion as long as poſſible, a ſowing may be performed every three weeks or month, from January until September or October. The ſpring and ſummer-ſowings furniſh Lettuce for uſe from April or May until November; and the autumn-ſowings in Auguſt, September, and October, come in for uſe late in autumn, and in winter; and for early ſpring Lettuces, as before obſerved, in warm borders, under walls, and in frames, and other ſhelter; obſerving that all the ſorts ſucceed either by remaining where ſowed, thinning them to proper diſtances; or by tranſplantation, placing them a foot at leaſt aſunder; but it is proper always to tranſplant a principal quantity of each ſowing, both to thin the ſtanding plants properly, and to obtain a longer ſucceſſion of each crop, for the tranſplanted Lettuces will ſucceed the ſtanding plants for uſe, and often grow larger, and generally remain longer in perfection before they run.

The main crops of Lettuces ſhould generally be ſowed diſtinct from other crops, and each different variety ſeparate; they, however, are very commonly ſowed thin among other ſmall crops, to ſave ground; ſome of the plants deſigned for tranſplantation into other places, and ſome to remain at good diſtances for cabbaging; ſo are frequently ſowed among early radiſhes and ſpinach, alſo among onions, leeks, carrots, parſneps, &c. particularly the upright ſorts of Coſs-lettuces; any of the ſorts are likewiſe often ſowed thin among winter ſpinach, but chiefly the common green cabbage, and brown Dutch kinds; but in ſowing any ſorts of Lettuces among any of theſe crops, a thin ſprinkling ſhould only be admitted; but when there is plenty of ground, I ſhould be for ſowing the main crops principally diſtinct by themſelves, and the plants thinned out, leaving ſome to remain for cabbaging where ſowed, and tranſplant the reſt into another ſpot of ground as hereafter directed.

Obſerve, as before noticed, that when intended to have early young open Lettuces for ſpring uſe, the white cabbage kinds are the proper ſorts to ſow for that purpoſe, and may begin to thin the young plants for uſe, when their leaves are an inch or two broad, which may be continued as they are wanted, leaving ſome at regular diſtances to arrive at full growth.

But for full-grown Lettuces, it is proper to ſow the different ſorts both of the principal cabbage and coſs kinds at the ſame time in ſeparate ſpots of ground, whereby you will have a regular ſupply of each ſort, only obſerving at each ſowing to ſow moſt of thoſe ſorts that are in the greateſt requeſt either for family uſe or market; remarking the ſorts, as before directed, that are the moſt proper for uſe at the different ſeaſons of the year, and the different times of ſowing as above mentioned.

The early ſowings of all the ſorts ſhould be performed on a warm border, or ſome dry ſheltered ſituation, to have the crops as forward as poſſible; and if required to have a few early Lettuces as forward as can be, they may be greatly forwarded by ſowing in a ſlender hot-bed in January or February; particularly the white and green Coſs-lettuce, and if the young plants of an inch or two high are pricked out into another ſlight hot-bed, it will ſtill bring them more forward; and after having a month's growth ſome may be thinned out in mild weather, and planted a foot diſtance in the open ground; but in default of hot-beds, a few may be ſowed in frames, or under hand-glaſſes in a bed or border of natural earth, to have ſhelter on nights and cold weather, which may bring them a little forwarder than thoſe fully expoſed. The ſowing, however, in a hot-bed, or under frames, &c. is more particularly neceſſary after a ſevere winter, when the autumn-ſowed crops of Lettuces deſigned for ſpring uſe are cut off; but in mild winters, when a plentiful ſupply of the autumn Lettuces have ſurvived the winter, there will be little

little occaſion for any other precaution than to ſow the earlieſt ſpring-ſowings on warm borders, &c. as aforeſaid.

But the general ſpring and ſummer-ſowings for the main crops, for ſummer and autumn uſe, ſhould be performed principally in any open ſituation, in the quarters, or large open borders, the more diſtant from ſpreading trees and buſhes the better; the ſame ſhould alſo be obſerved in the tranſplanted Lettuces, for when under, or too near ſhady places, they always draw up weak, never cabbage large, and ſoon fly up to ſeed; whereas thoſe in a free expoſure are of robuſt growth, and cabbage large and firm.

The ſowings of all the ſorts at every ſeaſon is performed principally by broad-caſt on the ſurface; obſerving, as the ſeeds are ſmall and thin, particular care is requiſite in ſowing, to ſpread them regular, and not too thick, and rake them in with an even hand; or thoſe ſowed in hot-beds under frames, may, inſtead of raking-in, have earth ſifted over them near a quarter of an inch deep; and in about from eight or ten to fifteen or twenty days after ſowing, in either method, the plants will appear, which are to be managed according to the following directions.

*Their general Culture.*

When the plants of each ſowing come up, their principal culture is to keep them clean from weeds, thin them where too cloſe, and tranſplant ſome of each ſowing; but as to the earlieſt ſowed plants, which come up early in ſpring, if attacked while very young with ſevere froſt, thoſe in borders may be defended with a light covering of dry long litter occaſionally; and thoſe in hot-beds, or under frames, &c. in the full ground, by covering with the glaſſes. The weeding and thining the different crops of theſe plants may be performed either by hand or hoe; obſerving, if deſigned to have the principal crops of plants to remain where ſowed to attain perfection, and that they form a crop of themſelves, hoeing will be the moſt beneficial, both to deſtroy weeds and thin the plants to proper diſtances, leaving them fifteen or eighteen inches aſunder, unleſs it is neceſſary to thin them by degrees, either by occaſional tranſplantings, or by drawing out young plants for uſe, as they may be wanted; but when any conſiderable quantity of the plants are deſigned for tranſplantation, which is adviſeable in every crop, the weeding and thinning ſhould principally be performed by hand; ſo thinning out the largeſt plants occaſionally for tranſplanting, leaving enough of the others at regular diſtances, as above, for a crop to arrive to full ſize. It is, however, always proper to tranſplant ſome of each ſowing, by which you will have the longer ſucceſſion of good plants.

When deſigned to tranſplant any ſort of Lettuce, it ſhould be done when the plants are about three or four inches high, not more, for when larger they are apt to flag greatly, and do not root ſo freely as younger plants: moiſt weather will be particularly neceſſary for this work. Take up the plants with care, ſo as to preſerve as much root as poſſible; and proceed to plant them by line and dibble, in rows, a foot at leaſt aſunder, but if fifteen or eighteen inches diſtant the better, eſpecially for the larger kinds, ſuch as the grand admirable cabbage Lettuce, and the white and green coſs, allowing the ſame diſtance between the plants in each row; and if ſet in the quincunx order, the plants will have ſtill more room to grow. As ſoon as planted, give water, which ſhould be repeated, if dry weather, ſeveral times for the firſt week or ten days, till the plants have taken freſh root, and beginning to advance in growth.

Thus continue planting out a quantity every three weeks, from March, April, or May, until September or October, whereby you will have a daily ſupply of good well-cabbaged Lettuces eight or nine months in the year; and thoſe planted out late, will ſtand the winter, and cabbage early in ſpring.

If the ſummer tranſplantings are planted in ſhallow drills, it will be ſome advantage in facilitating the freſh-rooting of the plants, as the drills will confine the water given principally about the plants, and alſo retain the moiſture longer than the level ſurface. See DRILLS.

Tying up Lettuces to forward their cabbaging, and to whiten and render them criſp, is often practiſed to the early ſpring and ſummer crops, particularly coſs Lettuces. When the plants are well advanced in growth, and beginning naturally to form their inner leaves for cabbaging, tie all their leaves up cloſe together with a piece of baſs, a little above the middle of the plant, not too ſtrait,

but ſo as the whole plant may have room to grow; beſides, if tied too cloſe, they are apt to rot in the heart: this work of tying, however, is only neceſſary for ſome of the earlieſt plants of the forward crops, the ſucceeding ones will cabbage faſt enough without that aid; only obſerving, if any ſorts ſhould be backward in cabbaging, as is often the caſe with the black coſs Lettuce, they may always be facilitated therein by the above practice.

*Winter and early Spring Crops.*

Winter Lettuces, both for winter uſe, and to ſtand the winter in warm borders and in frames, &c. for ſpring ſervice, are obtained by two or three different ſowings in autumn, from the middle or latter end of Auguſt until the end of September or October.

That is, to have Lettuces ſtand for uſe all winter, and early in ſpring, ſow ſome hardy green and white cabbage Lettuce, brown Dutch, and green coſs, about the middle of Auguſt, and beginning of September, in any open ſituation, and the plants will come up in a week or ten days; about the end of September, and in October, plant out a parcel of the beſt plants of each ſowing, in a warm dry ſituation, ſix or eight inches aſunder; and at each planting, plant alſo ſome under frames at the ſame diſtance; to be covered with glaſſes every cold night, and all bad weather; or for want of frames, plant them under hand-glaſſes, or in a bed arched over with hoops or rods, to be covered with mats in winter froſts; but if you uſe frames, chuſe them as ſhallow as poſſible, and ſink the back part in the ground, ſo as to be only equal in height with the front, that the ſurface of the bed and plants may be all an equal diſtance from the glaſſes, if not more, at firſt, than ſix or eight inches, the better, as it will prevent their drawing up weak and open, which is the caſe when in very deep frames, but in ſhallow ones, they will be more robuſt and cloſe, and being nearer the glaſſes, they will be forwarded more in growth during winter. Under either of the above ſhelters, let the plants enjoy the free air in mild dry weather; but cover them every cold night, with the proper covers, eſpecially after October, alſo in all very cold, and in very wet weather, day or night, particularly thoſe in frames and under glaſſes; and as to thoſe in hand-glaſſes, they may have the glaſſes almoſt conſtantly over them in winter, tilting up one ſide in mild weather, and only ſet them entirely off in fine mild dry days; but in ſharp froſty weather keep thoſe under every kind of ſhelter quite cloſe; allowing alſo additional covering of mats or litter, when the froſt is very intenſe; thoſe in the borders may alſo be defended by ſome light litter; but at no time ſuffer the covering to remain longer on any of the crops than the bad weather continues, but indulge them with free air every mild day. By the above practice you may have Lettuces for uſe moſt part of winter, and early ſpring, particularly the cabbage Lettuces: thoſe planted out firſt will be fit for uſe in November and December, and the ſecond planting will come in towards Chriſtmas, and being ſheltered by the glaſſes, will continue coming in for winter and ſpring uſe till ſucceeded by the other latter autumn ſowings; obſerving according as any are gathered out of the frames or glaſſes, ſome may be removed from the borders to fill up the vacancy, whereby the glaſſes may be conſtantly employed during the winter.

Sometimes for Lettuces intended to be planted in frames late in autumn for winter uſe, a moderate hot-bed is made for their reception, in order that they may be well forwarded in the beginning of winter, and if the heat is continued moderately by aid of linings, allowing plenty of air all mild weather, the plants will be very fine by Chriſtmas, or thereabout.

*Winter-ſtanding Spring Crops.*

But to have Lettuces principally for ſpring uſe, ſome ſeed ſhould be ſowed towards the middle and latter end of Auguſt to ſtand the winter, ſome where ſowed, others to be tranſplanted into warm borders, to ſtand without any other ſhelter than that of the walls or other fences; and another ſowing ſhould be performed about the middle of September, to raiſe plants for pricking under frames to have ſhelter of the glaſſes all winter, to be as a reſerve in caſe thoſe in the borders are deſtroyed; if both ſtand, one will ſucceed the other.

In the former caſe, a quantity of the plants, when two or three inches high, in October, or early in November, ſhould be planted out into a warm dry ſituation, in rows ſouth and north, ſix inches aſunder, and here let them remain to take their chance all winter: out of the whole many of them will probably eſcape the froſt; but in very ſevere weather they

they may be protected by a light covering of dry long litter, which remove away again in due time when the froſt breaks. In March or April, if they remain too thick, ſome ſhould be thinned out and planted in another place, in rows, twelve or fifteen inches aſunder; theſe crops, thus wintered in the open ground, will come in for uſe in April and May, to ſucceed thoſe others ſowed in autumn, and ſheltered occaſionally all winter, and will remain good till the ſpring ſown plants come in.

In the latter caſe, i. e. thoſe ſowed in September, to be wintered in frames, ſhould be planted therein about the latter end of October, or beginning of November, planting them in rows from the back to the front of the frame, three inches diſtance; cloſe the earth well about each plant, finiſh with a moderate watering all over the plants, and put on the glaſſes to promote their more ſpeedy rooting anew, ſhoving the lights, however, two or three inches down, to give vent to the moiſt vapour ariſing from the mould; but when the plants have taken freſh root, and ſet to growing, admit the full air every mild dry day, by taking the glaſſes entirely off, which muſt be continued throughout the winter ſeaſon, in all dry mild weather, but put them on every night, in cold or very wet weather eſpecially; even alſo adays when great rains prevail; and in froſty weather keep the glaſſes always on, except in the middle of ſunny days, but when the froſt is very ſevere, keep them cloſe night and day, uſing alſo other covering of mats or long litter over the glaſſes, and around the ſides of the frame. During the winter, keep all decayed leaves picked off; and as the ſpring and warm weather advances, let them have the benefit of warm ſhowers.

Thoſe thus wintered may be effectually preſerved, if thoſe in the openground ſhould be deſtroyed by the froſt or exceſſive moiſture.

In March tranſplant ſome of them into the open ground, in rows, a foot at leaſt aſunder, water them moderately till freſh-rooted; obſerving to leave a crop remaining in the frames or winter-bed, a foot alſo apart, to ſtand to cabbage; which will arrive to perfection ſome conſiderable time before the tranſplanted ones, and thoſe that have been fully expoſed all winter.

For want of frames for the above purpoſe, a quantity of the plants may be pricked out under hand or bell-glaſſes in autumn, to ſtand the winter, either by themſelves for a full crop, or may plant ſome under the hand or bell-glaſſes, that are placed over early cauliflowers, as practiſed by the London gardeners, planting them round juſt within the glaſſes; managing them as directed for the frames; and early cauliflowers under hand or bell-glaſſes; or for want either of a ſufficiency of frames or hand-glaſſes, plant out a quantity in autumn, in four-feet wide beds, in a warm ſituation, and arch them over with hoops or rods, to cover with mats and litter in bad weather, as aforeſaid: they will here have a better chance of ſurviving the winter than thoſe fully expoſed; and in ſpring tranſplant a quantity, by way of thinning, into other beds, as as above directed.

Lettuces are ſold in the markets by the ſcore, which in London, thoſe that come in early, often fetch from half a crown to five ſhillings, but fall gradually in price, as the ſeaſon advances, to ſix pence or three pence per ſcore, two and twenty to each ſcore; though the fine large coſs Lettuce ſeldom much leſs than a ſhilling per ſcore of plants.

*Saving Seed of all the Sorts.*

To ſave Lettuce ſeed. Let it be remarked, that ſome of the early plants of all the ſorts ſhould principally be choſen for ſeed plants, for thoſe of the latter crops rarely run ſoon enough to ripen ſeeds perfectly before they are attacked by the autumnal rains and cold, which greatly retards the ripening of all ſorts of Lettuce ſeed; therefore, ſelect either ſome of the the winter-ſtanding plants, or ſome of the forwardeſt plants of the February or March ſowing; and the largeſt and beſt cabbaged of each reſpective kind, mark this, if you would continue your Lettuce fine; likewiſe it is of importance, as before hinted, to have the different varieties intended for ſeed, at ſome diſtance from each other, becauſe, if too near, the *ſemen maſculinum* of the different ſorts may mix and fecundate one another, and thereby a degeneracy or mongrel breed will be the conſequence, and the true ſorts would in time be loſt; and it is by not obſerving the above particulars by thoſe who ſave large quantities of ſeed for ſale, that ſo many baſtard bad ſorts of Lettuces are diſperſed about the country.

The ſeed ripens in Auguſt and September, but that of each plant rarely ripen all equally together, ſo that according as it ar-

rives to perfection, the reſpective branches ſhould be cut off in dry days, and ſpread upon a cloth, or tied in ſmall bunches, and hung up acroſs lines in a dry airy loft, for a week or two to dry and harden; then beat them out, and clean them from the down and other rubbiſh, and expoſe them upon cloths a few days to dry for keeping; then put them up in bags for uſe, and hang them in a dry room.

In many places where the farming gardeners cultivate great quantities of theſe plants in fields for ſeed, to ſerve the dealers, they pay but little regard to the goodneſs of the plants, but when they are a few inches high, hoe them out to about a foot diſtance, leaving them good, bad, and indifferent to ſtand to ſeed, which is very wrong, as many perſons are thereby diſappointed of their crops, by having moſt of the plants run before they are half-grown: the cultivators for ſeed ſhould, therefore, after the firſt hoeing, look over the plants from time to time, and clear out all thoſe that run up for ſeed before they cabbage, and reſerve only thoſe that are largeſt and beſt cabbaged.

All ſorts of Lettuce produce the greateſt quantities of ſeed in dry warm ſeaſons, and in wet cold autumns they ripen ſeed very ſparingly, and that late, and often very indifferent in reſpect to goodneſs for ſowing.

Lettuce ſeed is ſold in the ſhops by retail, at from ſix pence to a ſhilling the ounce; and may be had in any quantity from a quarter of an ounce to a pound, as ſhall be convenient, according to the extent of the garden, or demands of a family for the plants.

LANTANA, American Viburnum.

This genus conſiſts principally of ſhrubby exotics of Africa and America, for the greenhouſe and ſtove; growing a yard or two high, adorned with oval, oblong, and roundiſh ſimple leaves, and monopetalous tubular four-parted flowers.

Claſs and order, *Didynamia Angioſpermia.*

*Characters.*] CALIX, is monophyllous, ſhort, tubular, and four-parted. COROLLA, is monopetalous, with a cylindric tube, ſpreading at top, and divided into four obtuſe ſegments. STAMINA, two long and two ſhort filaments, and roundiſh antheræ. PISTILLUM, a roundiſh germen, ſlender ſtyle, and crooked ſtigma. PERICARPIUM, a roundiſh drupaceous unilocular fruit, containing a roundiſh bilocular nut.

There are about four or five ſpecies retained in the Engliſh gardens, two for the greenhouſe, the others for the ſtove.

*Green-houſe Kinds.*

[1]LANTANA *Africana.*

*African Ilex-leaved Lantana.*] Hath a ſhrubby ſtalk, branching irregularly five or ſix feet high; oval, pointed, ſerrated, cloſe-ſitting, alternate leaves, and white flowers, ſingly from the ſides of the branches.

[2]LANTANA *Salvifolia.*

*Sage-leaved Lantana.*] Hath a ſhrubby ſtalk, branching five or ſix feet high; oblong, pointed, rough, cloſe-ſitting, oppoſite leaves, four or five inches long; and flowers in cluſters from the upper parts of the branches.

*Hot-houſe Kinds.*

[3]LANTANA *Trifolia.*

*Trifoliate Lantana.*] Hath a ſhrubby, woolly-barked ſtalk, branching about a yard high; oblong, indented, rough leaves, placed ſome by threes, others oppoſite; and purple flowers in oblong roundiſh ſpikes from the ends of the branches.

[4]LANTANA *involucrata.*

*Involucrum-headed Lantana.*] Hath a ſhrubby ſtalk, branching four or five feet high; roundiſh, indented, rough leaves, by pairs oppoſite; and from the ends of the branches, umbellate heads of purple flowers, attended by many ſmall leaves like an involucrum.

[5]LANTANA, *Camara.*

*Camara, or Leafleſs-headed Lantana.*] Hath a ſhrubby ſtalk branching five, ſix, or eight feet high, in different varieties; oblong, indented, rough oppoſite leaves, two or three inches long; and from the ſides and ends of the branches umbellate heads of yellow, purple, or red flowers in the varieties, unattended by leaves.

*Variety.*] Nettle-leaved leafleſs-headed Lantana.

[6]LANTANA, *Aculeata.*

*Prickly Lantana.*] Hath a ſhrubby ſtalk, branching three or four feet high, the branches angulated and armed with crooked ſpines; oval, ſpear-ſhaped, hairy, oppoſite leaves; and from the ſides and ends of the branches umbellated heads of ſcarlet flowers, having the centre ones yellow or orange-coloured.

All theſe ſpecies have durable woody ſtalks and branches, retaining their leaves moſtly all the

the year, moſt of which are very rough; the flowers of all the ſorts are of one petal with a cylindric tube, divided above into four parts, (ſee the *Characters*) and appear from June or July until winter; ſometimes ſucceeded by largiſh berry-like fruit, ripening here in warm autumns.

Theſe plants are all of foreign growth; the two firſt of Africa, and the others of the warm parts of America; and all of them require ſhelter here in cold weather, the two former of the green-houſe, and the other four of the ſtove; ſo muſt be alaways kept in pots of light rich earth, and placed among the plants of thoſe two departments; the two green-houſe kinds may be placed in the open air all the ſummer; but the others only in the hotteſt months of that ſeaſon.

Their propagation is by ſeeds and cuttings, in hot-beds.

By Seed.—Sow it in pots of light earth, and plunge them in a bark hot-bed, and when the young plants are ſome inches high, prick them in ſeparate ſmall pots, and plunged alſo in the bark-bed; and inure the green-houſe kinds to the open air in ſummer, the others but little the firſt ſeaſon.

By Cuttings.——Cuttings of the young branches may be planted in pots in ſpring and ſummer, and plunged in a hot-bed, they will readily take root, and ſhoot at top the ſame year.

LATHYRUS, Chickling Vetch, compriſing the everlaſting and ſweet-pea, &c.

The plants are herbaceous climbers; of which there are three noted ſpecies of the flowery tribe, proper for the decoration of the pleaſure-garden; a perennial, and two annuals; all of them riſing with cirrhous-climbing ſtalks, mounting upon ſupport ſeveral feet high, adorned with diphyllous cirrhous leaves, and papilionaceous flowers.

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX, is monophyllous, bell-ſhaped, and five-parted at top. COROLLA, is papilionaceous, having a heart-ſhaped ſtandard, two oblong, lunulated blunt wings, and a half-round keel. STAMINA, ten diadelphous filaments, and roundiſh antheræ. PISTILLUM, an oblong narrow compreſſed germen, flat acuminated ſtyle, and hairy ſtigma. PERICARPIUM, a long compreſſed, acuminated, bivalvular pod, filled with roundiſh ſeeds, like garden peas.

There are many ſpecies of this genus, but not more than three that are commonly cultivated; all of which are for ornament.

[1]LATHYRUS *Latifolius.*

*Broad-leaved perennial Lathyrus, commonly called Everlaſting Pea.*] Hath thick, fibrey, perennial roots; climbing, thick, branching, annual ſtalks, having membranaceous wings between the joints, riſing upon ſupport by their cirrhi ſix or eight feet high; diphyllous leaves, of two ſpear-ſhaped lobes, terminated by claſpers; and numerous large red or purple flowers, on long foot-ſtalks, appearing plentifully from June till October, ſucceeded by abundance of ſeed.

[2]LATHYRUS *Odorata.*

*Odoriferous annual Lathyrus, commonly called Sweet-ſcented Pea.*] Hath a fibrey annual root; a climbing ſtalk, riſing upon ſupport, by its claſpers, three or four feet high; diphyllous leaves, of two oval lobes, terminated by climbing tendrils; and flowers by twos on long flower-ſtalks; of different colours in the varieties.

*Varieties of this are*] Purple-flowered ſweet-pea—white-flowered ſweet pea—variegated, or painted-lady ſweet-ſcented-pea. All of which flower in ſummer, from May or June until October, by different ſowings.

[3]LATHYRUS *Tangitanus.*

*Tangier annual Lathyrus, commonly called Tangier Pea.*] Hath a fibrey annual root; climbing ſtalk, riſing upon ſupport four or five feet high; diphyllous leaves, of two ſpear-ſhaped alternate lobes, terminated by tendrils; and from the joints of the ſtalk, large reddiſh flowers by twos, on long foot-ſtalks.

All theſe ſpecies of Lathyrus are herbaceous, and of hardy growth, their ſtalks long, ſlender, and furniſhed with cirrhi, or claſpers for the purpoſe of climbing and ſupporting themſelves; the firſt ſort, *Lathyrus Latifolius*, is perennial, or everlaſting in root, but annual in ſtalk; and the other two are annual in ſtalk and root, riſing from ſeed in ſpring, and wholly periſh in autumn. They all merit culture as flowery plants, but the perennial ſort is the moſt valuable, both for its durability in root, and long continuance in bloom; the two annual ſorts, however, flower very ornamentally, and by three or four different ſowings, may be made to flower all ſummer and autumn.

The flowers of all the ſpecies are papilionaceous, or butterfly-ſhaped, having four irregular petals, i. e. a vexillum, or ſtandard, two ſide wings, and a keel at bottom, ſucceeded by a long compreſſed pod filled with pea-like ſeeds.

The

The plants are proper ornamental furniture for any of the compartments of the pleaſure-garden, as they proſper in any common ſoil; but they muſt be allowed ſupport to climb upon, for they will climb by their claſpers, or cirrhi, on any neighbouring ſupport, ſuch as ſticks, buſhes, trees, or any thing they can lay hold of; ſo ſhould be ſowed in patches about the borders, and branchy ſticks, ſuch as is uſed for ſticking peas, placed for them to aſcend upon, and they will flower beautifully all ſummer and autumn. The everlaſting pea is alſo proper to be placed to run up the ſides of arbours and trees, and againſt walls and other fences, where it will have a very fine effect.

*Propagation, &c.*

Propagation of all the ſorts is by ſeed in the common ground in patches, where it is deſigned the plants ſhould flower, for they do not ſucceed ſo well by tranſplantation.

They ſhould be ſowed principally in ſpring, though if ſowed in autumn, the plants will flower earlier the following year, and the perennial ſort once ſowed, the ſame plants remain for years by the root, and produce new ſtalks annually; but the annual ſpecies muſt be ſowed annually, and that in order to continue a ſucceſſion of bloom from the earlieſt part of ſummer, until the end of autumn, three or four different ſowings is neceſſary; the firſt ſowing may be in autumn in November or December, or very early in ſpring; a ſecond in March or April; and a third in May, &c. by which you will have plants producing flowers in conſtant ſucceſſion three or four months.

Sow each ſpecies and variety in ſeparate patches, five or ſix ſeeds in each, about an inch deep; when the plants are come up a few inches high, place ſome neat branchy ſticks of proper height to each patch of plants for them to climb upon, and keep them clean from weeds, which is all the culture they require.

The firſt may alſo be propagated by tranſplanting ſome of the roots in autumn, winter, and ſpring; but thoſe rarely ſucceed ſo well as ſowing the ſeeds where the plants are to remain.

LAVANDULA, Lavender.

The plants are principally under-ſhrubby ever-greens, proper both for oeconomical uſes of a family, and for the ſhrubbery and green-houſe, growing two or three feet high very branchy and buſhy, cloſely ornamented with ſmall leaves; in ſome entire, others divided; and numerous ſmall monopetalous labiated flowers in erect ſpikes.

Claſs and order, *Didynamia Gymnoſpermia.*

*Characters.*] CALIX, is monophyllous and ſlightly indented. COROLLA, is monopetalous, tubulous below, ringent, and ſpreading above, the upper lip bifid; the under one equally trifid. STAMINA, two large and two ſhort filaments, and ſmall antheræ. PISTILLUM, a four-parted germen, ſlender ſtyle, and obtuſe ſtigma. PERICARPIUM, none, four ſeeds lodging in the calix.

There are three ſpecies cultivated in the Engliſh gardens; two for the open ground, and one for the green-houſe.

[1]LAVANDULA *Spica.*

*Spikeflowered common Lavender, or Lavender Spike.*] Hath a ſhort ſhrubby ſtalk, cloſely branching from the bottom two or three feet high; ſmall ſpear-ſhaped entire leaves; and from the ends of the branches, numerous, long, erect, naked ſpikes of ſmall ringent flowers, of different colours in the varieties.

*Varieties.*] Common narrow-leaved Lavender, with blue flowers, and with white flowers—broad-leaved Lavender—dwarf Lavender: all of them flowering in July.

This ſpecies is the common Lavender, but the narrow leaved variety, with blue flowers, is the ſort commonly cultivated for its flowers for medicine, &c.

[2]LAVANDULA *Stœchas.*

*Common Stœchas, or French Lavender.*] Hath a ſhrubby very branchy ſtalk, riſing two or three feet high; very narrow ſpear-ſhaped, pointed, hoary leaves, oppoſite; and all the branches terminated by ſhort buſhy ſpikes of purple flowers in June and July; ſucceed by ſeeds in Auguſt.

*Variety.*] With white flowers.

[3]LAVANDULA *Dentata.*

*Dentate-leaved Stœchas.*] Hath a woody ſtalk, branching on every ſide three or four feet high; leaves deeply indented in a pinnated manner; and the branches terminated by ſcaley four-cornered ſpikes of flowers, appearing moſt part of ſummer.

All theſe plants are ſhrubby, durable in root, ſtem, and branches, and will indure ſeveral

ſeveral years in a moderately dry ſoil; but in a very moiſt ſoil are apt go off in winter.

The two firſt ſpecies are proper both for the kitchen-garden, for medical and other family uſes; and to plant in the pleaſure-ground to adorn the front of ſmall ſhrubbery compartments, where they will encreaſe the variety very agreeably; and are finely-ſcented aromatics, both when growing, and their flowers when gathered, eſpecially thoſe of the firſt ſpecies, which are in great eſteem for putting among cloaths, and diſtilling and other oeconomical uſes.

The flowers of the firſt ſort, are gathered for uſe in July, which being the time of their perfection, cutting off the ſpikes cloſe in a dry day, and tie them in ſmall bunches for uſe.

The above two ſorts ſhould generally be planted in a warm dry ſoil, in which they will be of the longeſt duration.

The third ſort being tender requires ſhelter in winter, ſo muſt be potted and placed in the green-houſe collection, where it will effect a good variety.

*Propagation, &c.*

All the ſorts are propagated plentifully by ſlips or cuttings of their young ſhoots in ſpring.

In March or April, take off a quantity of ſlips or cuttings, from three or four to ſix inches long, ſtrip off the under-leaves, then plant them in a ſhady border, four inches aſunder, give a good watering, repeat it occaſionally in dry weather, and the plants will be well rooted in ſummer, each become a good plant fit to be tranſplanted into any place early in autumn, that is September or October; removing them, if poſſible, with balls of earth, and if intended to plant them for uſe, ſet them in rows two or three feet aſunder, and two feet diſtance in each row; if any are deſigned for the ſhrubbery, they ſhould be ſtationed ſingly at good diſtances near the front.

Thoſe of the third ſort ſhould be potted to move to ſhelter in winter.

The *Lavendula Stœchas* is alſo often raiſed from ſeed. Sow them in March or April, in a bed of light earth, and rake them in evenly with a light hand; the plants will riſe in about a month; if dry weather, give water, and when they are three inches high, prick them out in beds, half a foot apart, and water them as they ſhall require until freſh-rooted; let them ſtand here till next ſpring; then you may thin out the beſt, and plant them where they are to remain.

LAVATERA, *Lavatera.*

This genus compriſes ſome tall herbaceous flowery annuals, and ſhrubby perennials, for the pleaſure-garden; all of them growing erect, from two or three to eight or ten feet high, garniſhed with large roundiſh heart-ſhaped, and angular leaves, and large quinquepetalous flowers, of the mallow kind.

Claſs and order, *Monadelphia Polyandria.*

*Characters.*] CALIX, is double and permanent, the exterior part is of one ſemitrifid leaf, and the interior is quinquefid. COROLLA, five obcordate, plane, ſpreading petals. STAMINA, numerous monadelphous filaments, and kidney-ſhaped antheræ. PISTILLUM, an orbicular germen, ſhort ſtyle and many briſtley ſtigmas. PERICARPIUM, numerous ſmall capſules collected into a head covered with a hollow ſhield, each capſule having a kidney-ſhaped ſeed.

The moſt noted ſpecies are the following annuals and perennials.

*Annual Kinds.*

[1]LAVATERA *Cretica.*

*Cretan Annual Lavatera.*] Riſes with an upright, branching, herbaceous ſtalk, two or three feet high, the lower branches very diffuſe or ſpreading; large, roundiſh, lobated leaves, the upper ones acutely trilobate; and the foot-ſtalks of the flowers riſing in cluſters from the axillas of the leaves, each ſupporting one large flower of different colours in the varieties.

*Varieties are*] Cretan Lavatera with red flowers—white flowers—and with purpliſh flowers.

[2]LAVATERA *Trimeſtris.*

*Spaniſh Lavatera*] Riſes with a ſlender, herbaceous, rough ſtalk, branching two feet high; trilobated ſmooth leaves, having oval-lanceolate lobes, the middle lobe much the longeſt; and pale-red flowers, ſingly on ſhort foot-ſtalks.

*Perennial Shrubby Kinds.*

Theſe have tall ſtraight, ſomewhat ſhrubby, perennial ſtems, of ſeveral years duration in dry ſoils.

[3]LAVATERA *Arborea.*

Tree-

*Tree-Lavatera, commonly called Tree-Mallow.*] Riſes with a thick, ſtrong, perennial ſtem, eight or ten feet high, dividing at top into many branches; large, ſeven-angled, plaited, ſoft, woolly leaves; and from the axillas, cluſters of ſhort foot-ſtalks, each ſuſtaining one large purple flower, appearing in ſucceſſion from June till September.

4 LAVATERA *Triloba.*

*Trilobate Shrubby Lavatera.*] Riſes with an upright, thick, branchy, perennial ſtem, the branches numerous and ſpreading; trilobate, and ſubcordate-roundiſh, crenated, woolly leaves; and aggregate foot-ſtalks, each ſuſtaining one light purple flower.

5 LAVATERA *Albia.*

*Albian Five-lobed Shrubby Lavatera.*] Riſes with an upright, branching, perennial ſtalk, five or ſix feet high; large five-lobed, ſoft, woolly leaves; and light-purple flowers, growing ſingly.

The flowers of all the ſpecies, are large, compoſed each of five broad petals, and grow on foot-ſtalks from the joints of the ſtem and branches, in great numbers, continuing in ſucceſſion from June until Auguſt or September, ſucceeded by plenty of ſeed in autumn.

The plants in general are of hardy growth, and ſucceed in any of the open borders; the annuals are only of one ſummer's duration, the perennials of ſeveral years, both in root and ſtem.

They are all proper ornaments for any part of the pleaſure-ground.

The annuals particularly have ſingular beauty, their flowers being large, numerous, and conſpicuous, and very proper furniture where large ſhowey plants are required; and are eaſily and abundantly raiſed from ſeed in the open ground.

The ſhrubby kinds are alſo good furniture for ſhrubbery compartments, having large, ſtraight, upright, durable ſtems, terminated by branchy buſhy heads, and very large ſoft foliage, that form a fine variety in aſſemblage; though their flowers are often hid by their large leaves. Theſe perennial kinds ſhould have a dry ſoil, otherwiſe are apt to go off in two or three years; a freſh ſupply, however, may always be eaſily raiſed from ſeed in the common ground.

*Propagation of all the Sorts.*

They are propagated abundantly by ſeed in the open ground in the ſpring; the annuals in the place where ſowed, and the perennials alſo either where they are to remain, or for tranſplantation.

The annuals ſucceed generally beſt when ſown where it is deſigned they ſhall flower, either in the borders, or in pots. Sow them in ſpring, any time from February till May, in patches, four or five ſeeds in each, half an inch deep; when the plants are an inch or two high, thin them to two or three in each patch, or if only one in a place, the plants will be the ſtronger and more branchy; the ſame method is to be obſerved in ſowing them in pots.

If intended to tranſplant any of theſe kinds from one place to another, it ſhould be done while the plants are young, about three or four inches high, for their roots being long and not very fibrey, they do not ſucceed ſo well by tranſplantation, as plants with more fibrey roots.

The perennials are alſo raiſed plentifully by ſeed in a bed or border of light earth, either in patches, as above, to remain, or may be ſowed for tranſplantation, by broadcaſt, and raked in, or in ſhallow drills, half a foot aſunder; and when the plants, ſowed in either method for tranſplanting, are three or four inches high, plant them out at once in the places where they are to remain, or may be planted in nurſery beds, to remain till autumn or ſpring, or till wanted.

LAURUS, Bay Tree.

This genus furniſhes ſome eminent evergreen and deciduous trees, both for ornamental plantations and the green-houſe, growing from ten or fifteen to twenty or thirty feet high; garniſhed with largiſh, oblong, moſtly entire leaves, and ſmall hexapetalous hermaphrodite flowers.

Claſs and order, *Enneandria Monogynia.*

*Characters.*] CALIX, none. COROLLA, ſix oval, concave, acuminated, erect petals. STAMINA, nine filaments ſtanding by threes, and ſmall antheræ. PISTILLUM, an oval germen, ſingle ſtyle, and obtuſe ſtigma. PERICARPIUM, an oval, acuminated, unilocular berry, containing an oval ſharp-pointed nut or ſeed.

There are about ſeven or eight ſpecies of this genus, all of them natives originally of foreign parts; the common Bay, that of the ſouth of Europe, the others of America and Aſia; and of which ſpecies three are hardy, and the reſt for the green-houſe; of the hardy

hardy kinds, one is a beautiful ever-green, and two deciduous, and the green-houſe ſorts are principally of the ever-green tribe.

*Hardy Ever-green Kinds.*

[1]LAURUS *Nobilis.*

*Noble Ever-green Laurus, or Common Bay-tree.*] Hath an upright trunk, branching on every ſide from the bottom upward, riſing twenty or thirty feet high; ſpear-ſhaped, nervous, ſtiff, ever green leaves, three inches long and two broad; and ſmall, yellowiſh, quadrifid, dioecious flowers; ſucceeded by red berries in autumn and winter. Is a native of Italy, &c. but has been long in the Engliſh gardens.

*Varieties.*] Broad-leaved Bay-tree—waved-leaved Bay-tree—narrow-leaved Bay-tree—ſtriped-leaved Bay-tree.

The broad-leaved ſort is often preſerved in the green-houſe collection, but all the ſorts may be inured to the open air all the year the ſame as the common Bay.

*Hardy Deciduous Kinds.*

[2]LAURUS *Æſtivalis.*

*Æſtival, or Deciduous Bay.*] Riſes with an upright ſtem, branching eight or ten feet high, covered with a purpliſh bark; oblong-oval, acuminated, veined, deciduous leaves, two or three inches long, half as broad, growing oppoſite; and ſmall white flowers; ſucceeded by red berries, but none in England. Is a native of North America.

[3]LAURUS *Benzoin.*

*Benjamin-tree.*] Grows fifteen or twenty feet high, dividing into a very branchy head; oval, acute, unveined, deciduous leaves; three or four inches long, and half as broad; and ſmall yellowiſh flowers, not ſucceeded by berries in England. Is a native of North America.

From this tree is ſaid to be procured the medical ſubſtance, called Benjamin.

[4]LAURUS *Saſſafras.*

*Saſſafras-tree.*] Hath a ſhrub-like ſtraight ſtem, branching ten or fifteen feet high; garniſhed with both oval, and three-lobed, ſhining, deciduous leaves, of different ſizes, from three or four to ſix inches long, and near as broad; and ſmall yellowiſh flowers; ſucceeded by blackiſh berries, but not in England. Is a native of North America.

The wood of this tree is very fragrant, and is eſteemed a great antiſcorbutic; and uſed in infuſion, like tea, is a very powerful purifier of the blood; for which purpoſe great quantities of the wood is brought hither from America, and is commonly cut or raſped into chips for uſe. In London the infuſion thereof, in the manner of tea, is ſold in the ſaloop-ſhops, and about the ſtreets, inſtead of ſaloop, or ſalep; but it is ſaid that too conſtant uſe of it occaſions the head-ach.

*Green-houſe Kinds.*

[5]LAURUS *Indica.*

*Indian Bay-tree.*] Riſes with an upright ſtraight trunk, branching regularly twenty or thirty feet high; adorned with very large ſpear ſhaped, plane, nervous, ever-green leaves, on reddiſh foot ſtalks; and bunches of ſmall whitiſh-green flowers; ſucceeded by large oval black berries; but do not ripen in England.

[6]LAURUS *Borbonia.*

*Borbonia, or Carolina Red Bay-tree.*] Riſes with an upright ſtraight ſtem, branching fifteen or twenty feet high; large, ſpear-ſhaped, ever-green leaves, tranſverſely veined; and long bunches of flowers, on red foot-ſtalks; ſucceeded by large blue berries, ſitting in red cups.

[7]LAURUS *Camphora.*

*Camphora, or Camphire-tree.*] Riſes with a large trunk, dividing into a very branchy head, twenty or thirty feet high; ſpear-ſhaped-oval, triple-nervous, ever-green leaves; and ſmall yellowiſh flowers, ſucceeded by black berries; but none in England. It is a native of Japan.

Every part of this tree imparts a fragrant ſmell of camphire, and the ſubſtance of that name is got by diſtilling the root and wood with water, in an alembic, having a kind of twiſted ſtraw head, thro' which the humidity evaporates, and the camphire ſticks to it.

[8]LAURUS *Cinnamonum.*

*Cinnamon-tree.*] Riſes with an upright, branching ſtem, fifteen or twenty feet high; oval-oblong, trinervous leaves; and whitiſh flowers in cluſters; ſucceeded by oval berries, but none here. Is a native of India and Egypt; and it is the bark of this tree that is the cinnamon of the ſhops; which grows in great plenty in the Iſland of Ceylon in the Eaſt Indies, from whence the Dutch ſupply us and other European markets with that commodity.

The flowers of all the ſpecies of Laurus are ſmall, conſiſting of ſix petals, grow uſu-

ally in clusters, but have no beauty; and appear in spring and summer, which in the common Bay are succeeded here by plenty of berries; but in the other sorts, rarely any seed in England.

All the species are of the tree and shrub kind, and merit admittance in every good collection. The three hardy sorts are proper for all ornamental plantations, and will succeed any where in common with other hardy trees and shrubs; and the tender kinds will exhibit a fine variety among the green-house exotics.

The *Laurus Nobilis*, noble or common Bay-tree, is indeed a noble ever-green tree, as well as a fine aromatic, has been long an inhabitant of our gardens, and is extremely proper for any of the shrubbery plantations, where, it being a lively ever-green, it will effect a fine variety at all seasons of the year. Some of the varieties of this tree are also sometimes retained as green-house plants, particularly the broad-leaved and narrow-leaved kinds, which by former botanists were considered as distinct species, but they are now found to be only varieties of the common Bay; and like that sort, may be innured to the open air all the year; remarking that even the common sort, as well as these, is apt to suffer in its young branches in very rigorous winters; therefore, if thought convenient, some of the above varieties may also be potted to have shelter in winter, and to encrease the variety of the green-house collection.

As this tree in its several varieties is apt to throw out many suckers from the bottom, so as sometimes to form a thicket, to have the trees grow with handsome straight stems, and regular heads, the suckers should be all cleared away, and those of them that are taken off with roots, if planted, will form good plants.

The other hardy kinds, deciduous Bay, and the other two deciduous sorts, the *Laurus Benzoin* and *Sassafras*, also succeed in the open ground all the year, which for their singularity merit admittance in every shrubbery; and the nature and beauty of their fine foliage will contribute exceedingly to the variety of the deciduous plantations.

The green-house kinds requiring shelter here in winter, must always be kept in pots; they are all fine plants, and should never be wanting in curious green-house collections: pot them in rich light mould, and place them in the green-house all winter, and in the open air in summer. See GREEN-HOUSE Plants.

But the cinnamon is also sometimes retained as a stove-plant: it will, however, succeed in the open air in the heat of summer, and in a good warm green-house in winter, especially such as are accommodated with flues, &c. to have fires in severe weather.

*Propagation, &c. of all the Sorts.*

The common Bay is propagated by seed, layers, and suckers.

By Seed —This should be sowed soon after the beries are ripe, or early in spring, either in beds, covering them with earth near an inch deep, or in drills half a foot asunder, the same depth; the plants will come up late the same spring; observing to supply them with frequent watering during summer, and in winter defend them from severe frost, by shelter of mats, or some other covering, they being tender while young: and after having two summer's growth in the seed-bed, then, in the spring following, transplant the strongest in nursery-rows, two feet asunder, and a foot apart in each row; giving water in dry weather, till they have taken good root, and hoe down weeds in summer. Here they may remain till half a yard, or two or three feet high, and then planted out into the shrubbery in autumn or spring.

If the berries are sowed in pots and plunged in a hot-bed in spring, it will bring the plants forwarder, being careful to innure them to the full air in summer.

By Layers.—Lay down some of the lower branches that are well furnished with young shoots; each of which shoots are to be slit-layed, to form plants: they will be rooted in one year; then in spring take them off, and plant them in the nursery as directed for the seedlings.

By Suckers.—These should be taken up with good roots in autumn or spring, and planted in the nursery like the seedlings and layers.

The propagation of the deciduous Bay, Benjamin and Sassafras-tree, is by seed, by layers, and sometimes by suckers and by cuttings The seeds or berries are procured from America, preserved in sand; which should be sowed as soon after they arrive as possible, because they often lie a year before they germinate: sow them in a bed of light earth an inch deep, or may sow them in largish pots the same depth, plunging them in mould in an

an eaſt border up to their rims, till ſpring following, and if then placed in a hot-bed, it will greatly forward the germination of the ſeed, and ſoon bring up the plants; but they muſt be timely innured to the full air: the young plants raiſed by either method, ſhould be watered during ſummer, and ſheltered from froſt in winter, like the common Bay-ſeedlings; and when two years old, plant them out in nurſery rows, as directed for thoſe plants. The propagation of theſe two ſorts by layers and ſuckers, is the ſame as directed for the Bay-tree, but it is ſometimes two years before the layers are rooted.

Cuttings of them will ſometimes put out roots by aid of a good hot-bed.

The green-houſe kinds are propagated commonly by layers, but they are often two years before they are ſufficiently rooted. They may alſo be raiſed from ſeeds, procured from the places of their growth abroad, and ſow them in pots; they rarely grow the firſt year, ſo place them in the open air in ſummer, and in the green-houſe, near the windows, in winter; and in ſpring place the pots in a hot-bed, which will bring up the plants, giving air daily, and frequent waterings, and innure them by degrees to the open air as the ſummer advances; place them in ſhelter in winter, and in ſpring plant them in ſeparate ſmall pots, managing them as other green-houſe ſhrubs, &c.

LAWN, a ſpacious open plain of graſs-ground, in a garden or park, and generally made to extend immediately in the front of the manſion of a country ſeat.

A noble lawn of graſs extended in the principal front of the habitation, adds conſiderably to the grandeur of the garden and ſcite in general, and beauty of the manſion, by laying it open to the neighbouring country, as well as admitting of extenſive proſpects; ſo that where there is ſcope of ground, a ſpacious Lawn, as large as the nature of the garden admits, ſhould always be planned in the moſt conſpicuous part immediately adjoining the houſe, and may be extended outward as far as ſhall be convenient, even beyond the limits of the garden, in large eſtates, continuing it forward to the utmoſt boundary of a park, or paddock, or as far as the view from the houſe ſhall extend, allowing width in proportion; having each ſide bounded by noble rural plantations, interſperſed with ſerpentine walks, and open ſpaces both of graſs and gravel, of different forms and dimenſions, for places of retirement, ſhade, and ornament.

The ſituation of a Lawn ſhould generally be directly on the main front of the dwelling, if the nature of the ground admits; or in ſome caſes, where there is good ſcope of ground, it may be continued more or leſs each way, but always the moſt conſiderably on the principal front, if the ſituation allows it, which if it fronts the ſouth, or towards any of the ſoutherly points, is the moſt deſirable aſpect for a complete Lawn.

The dimenſions may be from about a quarter of an acre to ſix or eight, according to the extent and ſituation of the ground, and in large eſtates, having a park, &c. adjoining, the Lawn is often extended over ha-ha's beyond the garden, ſometimes to ten, twenty, or even to fifty or ſixty acres, or more.

As to figure, it is very commonly oblong, ſometimes ſquare, oval, or circular, all of which may be according to fancy, or to the figure of the ground; but ſomewhat of the oblong form is rather the moſt elegible; and in whatever figure the Lawn is deſigned, it ſhould widen gradually from the houſe outward to the fartheſt extremity, to have the greater advantage of proſpect; having both ſides bounded by rural ſhrubbery plantations, as before obſerved; continuing the homeward part of the plantation on each ſide, gradually round toward each wing of the houſe, that company may ſooner arrive in the walks of the plantation under ſhade, ſhelter, and retirement, when required; and the termination at the farther end, may be either a ha-ha, to extend the proſpect, if there ſhall be an agreeable one; otherwiſe, if there is no good view beyond the extreme limits, it may terminate in a ſhrubbery; or if the Lawn is very extenſive, and no inviting proſpect beyond the extreme boundary, the termination may be a plantation of ſtately trees, arranged in conſiderable ſweeps and concave curves, that the imagination may conceive the view to be ſwallowed up in wood. When, however, the Lawn extends towards any great road, or diſtant agreeable proſpect, ſo as to command views thereof, it is more in character to have the utmoſt verge open, ſo as to admit of a grand view to the manſion.

The ſide boundaries of the Lawn ſhould be formed with plantations of curious ſhrubs and trees, diſpoſed in clumps, alternately deciduous and ever-greens; not in cloſe re-

gular arrangement, but in rural diſpoſition, in imitation of nature, in irregular elegant clumps, with irregular breaks, or opens of graſs-ground between, communicating with the lawn, for views, &c. the clumps to be of different dimenſions, variouſly formed, having ſome parts in grand projecting ſweeps advancing toward the Lawn, others in concave curves the contrary way, all varying in their dimenſions, poſition, and direction, to appear more rural, and to take off all ſtiff formal appearance, both from the figure of the Lawn and plantations; obſerving, as above, to plant the clumps, with deciduous and evergreen plants alternately; and place the lower growth of ſhrubs towards the front, and the taller backward in proportion to their ſeveral ſtatures, ſo as to exhibit a regular gradation of height, that the different ſorts may appear from the Lawn; and may be continued backward to ſome conſiderable depth, and backed with the moſt lofty trees; through the internal parts of the plantation may be gravel or ſand walks, ſome ſhady, others open; with here and there ſome ſpacious graſs openings, of different dimenſions and figures.

The homeward part of a Lawn, however, ſhould always have each ſide-verge ornamented as above, with plantations, which as the Lawn extends may gradually diminiſh.

Very extenſive Lawns in parks or paddocks, &c. have the ſurface ſometimes dotted with noble trees, diſperſed in different parts, at great diſtances not to obſtruct the view; ſome placed ſingly, others in groups by twos, threes, fives, &c. and ſome placed irregularly, ſome in triangles, ſweeps, ſtraight lines, and other different figures, to cauſe the greater variety, each group generally diverſified with different ſorts of trees, all ſuffered to take their own natural growth.

The graſs of the Lawn, and other graſs-ground communicating therewith, may be formed either by ſowing graſs-ſeed, or by laying with turf; but in very extenſive works turfing would be very expenſive, therefore ſeed is the moſt eligible; eſpecially in that part of the Lawn which is extended beyond the garden. See GRASS.

It ſhould always be kept perfectly neat, particularly the home Lawn within the garden, which ſhould be often poled and rolled all the year, and in ſummer well mowed, once a week at leaſt. See GRASS.

LAYING, the propagation by layers, is particularly adapted for almoſt all ſorts of trees and ſhrubs and many herbaceous plants.

The propagation by layers is effected by laying branches and young ſhoots of trees and plants in the earth, from two or three to five or ſix inches deep, leaving their tops out; and that part layed in the earth emits roots, ſome ſorts in from two or three to five or ſix months, others a year, and ſome are two years before they are ſufficiently rooted, and each layer ſo rooted commences a new plant, which are then to be ſeparated from the parent, and planted in the nurſery way to acquire due ſtrength and ſize, for the purpoſes for which they are calculated. See the method of performing the operation.

Vaſt numbers of ſhrubs and trees are propagated by Layers; but is more particularly applicable to the increaſe of numbers of the ſhrub kind; becauſe their branches grow near the ground, convenient for Laying: it may alſo, however, be practiſed with equal ſucceſs on fruit-trees and foreſt-trees, when their branches are ſituated low enough for Laying; though the varieties of fruit-trees are commonly propagated by grafting and inoculation, the vine and fig, however, often by Layers; and foreſt-trees, for the general part, by ſeed, except for the continuance of varieties, then it is performed either by layers, cuttings, grafting, or budding; for plants raiſed by all theſe methods, continue exactly the ſame in every reſpect, as the parent plant from whence they were raiſed; for, as obſerved on former occaſions, many ſorts of plants, when raiſed from ſeed, vary ſo greatly, that out of numbers very few may be like the original, or parent plant, as obſerved under the article GRAFTING, &c. ſo that Laying is a certain method both to continue any approved variety, as alſo to encreaſe ſuch ſhrubs or trees that do not produce ſeeds here, and which cannot be eaſily obtained; likewiſe is both an expeditious and plentiful mode of propagation; for by layers, many new plants are often raiſed in a few months, that would take two or three years to to raiſe them the ſame ſize from ſeed; and in many ſorts ſo abundantly, that all the ſhoots of any branch ſituated near the ground, or convenient for Laying, may be made each a diſtinct plant.

The Laying for all ſorts of the tree or ſhrub kinds, is generally performed on the young

young ſhoots of the preceding ſummer; layed in ſpring or autumn; and ſometimes on ſhoots of the ſame year, in ſummer, eſpecially of many ſorts of hard-wooded ever-green trees and ſhrubs, that do not ſtrike root readily in the older wood; which is generally mentioned in the culture of the reſpective ſorts. Though many ſorts of trees having their wood of a ſoft looſe texture, layers of them of ſeveral years growth, will often grow pretty freely; but for general Laying for moſt ſorts, the young wood of the former year is the proper part for that operation.

But in herbaceous plants propagated by layers, ſuch as carnations, pinks, double ſweet-williams, &c. the young ſhoots of the ſame year, in June and July are commonly the moſt ſucceſsful for layers.

The ſeaſon for performing moſt ſorts of tree and ſhrub Laying, is autumn and ſpring, though it may be performed at almoſt any time of the year, but the moſt general ſeaſon is any time from October till March, only excepting, as above obſerved: ſuch hard-wooded plants that are found not to ſucceed by the common method of Laying in the one-year's ſhoot, at the above ſeaſon, ſhould be layed in the ſame ſummer's ſhoot in June or July, while it is tender, before it becomes woody, and it will often be rooted by the end of the ſame ſummer.

Many kinds of under-ſhrubby and herbaceous plants will alſo ſucceed, if layed any time in ſpring or ſummer till the end of June; though June and July is the moſt ſucceſsful for ſuch of the herbaceous tribe, as carnations and others uſually propagated by Laying: it is, however, but few herbaceous plants that are propagated by that method, it being readily effected in many ſorts, to continue the varieties, by ſlips, off ſets, or parting the the roots, which is always mentioned; and by which the varieties of theſe kinds are continued the ſame as by Laying.

When intended to lay any trees or ſhrubs that naturally run up with ſtems, without furniſhing any conſiderable quantity of lower branches for Laying, a ſufficient number of ſtrong plants ſhould be ſet in the nurſery, at proper diſtances, and headed down in autumn after, within a few inches of the ground, that they may throw out a good quantity of young ſhoots the following ſummer, convenient for Laying the ſucceeding autumn; or, if you wait another year, you will have many more ſhoots for the purpoſe of layers, by the firſt ſhoots throwing out many lateral ones, and each of which layed will form a plant; and the Layers being rooted, and all cleared away, the ſtool remaining will furniſh another crop of ſhoots for Laying next year.

But when layers are required from any trees that are grown up, and whoſe branches are at a diſtance from the ground, a temporary ſtage or ſcaffold is erected, on which to place pots or tubs of mould to receive the Layers.

One general method of merely Laying the branches or ſhoots in the earth, is practiſed for all ſorts, as directed below; but previous to laying, they are often prepared different ways to facilitate their rooting, according as the trees of different natures require; as by ſimple Laying, twiſting, ſlitting, cutting the bark, piercing the ſhoot, and by wireing, &c. as follows:

By Simple Laying.—This is only ſimply Laying the ſhoots in the earth, as hereafter directed, without any previous preparation of twiſting, ſlitting, &c. and is ſufficient for vaſt numbers of trees and ſhrubs of the ſoft-wooded kinds: but ſuch as do not readily root by this ſimple method, muſt have recourſe to ſome of the following ways, and the ſorts which require it is generally mentioned under their proper genera.

By Twiſting the Layer.——By giving the ſhoot a gentle twiſt in the part deſigned to be layed, it greatly promotes and facilitates the emiſſion of fibres from the bruiſed parts; and layers of numerous trees and ſhrubs may be forwarded exceedingly in rooting by this method.

By Slitting, or Tonguing the Layer.——This is the moſt univerſal and generally moſt ſucceſsful mode, where any preparation of the ſhoot is neceſſary to promote its rooting; it is performed by ſlitting the ſhoot at a joint, up the middle, half an inch or an inch or more long, according to the ſize and nature of the Layer, forming a ſort of tongue, nearly the ſame as directed for carnation Layers; Laying that part in the earth, and raiſe the top upright, or rather pointing inwards, ſo as to ſeparate the tongue of the ſlit from the other part, and keep the ſlit open; then apply the earth about the Layer, as here under directed.

By Cutting the Bark.—This is done by cutting the bark all round at a joint, taking out ſmall chips thereof all the way below the cut, and Laying that part in the earth, it will readily

readily emit roots; in ſome ſorts more freely than by any other preparation.

By Piercing the Layer.—Thruſt an awl through the ſhoot at a joint in ſeveral places, Laying that part, and it will emit fibres from the wounds.

By Wireing the Layer.—Twiſt a piece of wire hard round the ſhoot at a joint, and prick it with an awl on each ſide of the wire in ſeveral places, Laying it in the earth, it will break out into roots at the confined and wounded parts; and often proves ſucceſsful to ſuch trees and ſhrubs that do not readily emit fibres by the other methods.

By one or other of the above methods, almoſt all ſorts of trees and ſhrubs may be propagated.

Always keep in mind that the young ſhoots of one or two years growth are the proper parts for Laying, either ſuch ſhoots riſing immediately from the bottom, properly ſituated for Laying; or large lower branches furniſhing plenty of ſuch ſhoots, ſhould be layed down, and all the ſhoots on it made layers, and the following is the method to be practiſed for Laying all ſorts.

The general method of Laying all ſorts of trees or plants, either by ſimple Laying as above, or by any of the other above methods, in reſpect to the preparation of the ſhoots, is in the following manner: the ground round each plant intended for Laying, muſt be digged, and excavated for the reception of the Layers; then lay down in the earth all the ſhoots or branches properly ſituated for this purpoſe, peg each down with a hooked ſtick; laying alſo all the proper young ſhoots on each branch or main ſhoot; fixing each layer from about three or four to ſix inches deep, according as they admit, and directly mould them in that depth, leaving the tops of every layer out of ground, from about two or three to five or ſix inches, according to their length, though ſome ſhorten their tops down to an eye or two only above the earth; obſerving to raiſe the top of each Layer ſomewhat upright, eſpecially the ſlit, or tongued Layers, to keep the ſlit part open; according as all the Layers of each plant, or ſtool, are thus Layed, level in all the mold finally, and equally in every part cloſe about every Layer, leaving an even ſmooth ſurface, with the top of each Layer out, as above directed.

Sometimes the branches of trees are ſo inflexible as not to be eaſily brought down for Laying; in which caſe they muſt be ſplaſhed, making the gaſh or cut on the upper ſide; and when they are grown too large for ſplaſhing, or that the nature of the wood will not bear that operation, they may be thrown on their ſides, by opening the earth about the roots, and looſening or cutting all thoſe on one ſide, that the plant may be brought to the ground to admit of Laying the branches.

When layers are to be made from greenhouſe ſhrubs, or other plants in pots, the Laying ſhould generally be performed in pots, either of their own, or others placed for that purpoſe.

After Laying in either of the above methods, there is no particular culture neceſſary, except in the heat of ſummer, to give occaſional waterings to keep the earth moiſt about the layers, which will greatly forward them, and promote a good ſupply of roots againſt autumn, when thoſe that are properly rooted ſhould be tranſplanted.

We before noticed, that ſome ſorts will be properly rooted in the autumn after Laying, and ſome require two years: examine them at the proper ſeaſon, October and November, and let thoſe that are rooted be cut from the main plant, with all the root poſſible, and plant them out in nurſery rows, a foot or two aſunder, according to their nature of growth, there to remain till of due ſize for their ſeveral purpoſes; but thoſe of tender quality muſt be potted, and placed among others of ſimilar nature.

When the layers are all cleared from the ſtools or main plants, the head of each ſtool, if to be continued for furniſhing Layers, ſhould be dreſſed; cutting off all decayed and ſcraggy parts, and dig the ground about them, and ſome freſh mould worked in cloſe about the head, to refreſh and encourage their producing a freſh ſupply of ſhoots for next year's laying.

LEGUMEN, Legum, or Pod, a ſpecies of ſeed-veſſel, ſuch as that of the pea, bean, kidney-bean, &c.

A Legumen, or pod, is a ſeed-veſſel generally oblong, having two valves, or external openings, incloſing a number of ſeeds that are faſtened along one future only, or joinings of the valves, and differs from that kind of pod, by the botaniſt termed *ſiliqua*, by the latter having the ſeeds faſtened to both ſides of the ſutures. See SILIQUA.

All the papilionaceous flowered plants, have a Legumen, for their ſeed-veſſel, exemplified

fied in the pea, bean, kidney-bean, &c. See PAPILIONACEUS.

LEUCOJUM, Great Snow-drop.

The plants are bulbous-rooted, herbaceous, flowery perennials, proper for the open borders, riſing with annual ſtalks a foot high, terminated by hexapetalous white flowers.

Claſs and order, *Hexandria Monogynia.*

*Characters* ] CALIX, an oblong compreſſed ſpatha opening on the ſide. COROLLA, is bell ſhaped, ſpreading, and of ſix oval petals. STAMINA, ſix ſhort briſtly filaments, and four-cornered erect antheræ. PISTILLUM, a roundiſh germen under the corolla, obtuſe, clavated ſtyle, and an erect briſtly ſtigma. PERICARPIUM, a turbinated trivalvular, trilocular capſule, containing numerous roundiſh ſeeds.

In this genus former botaniſts ranged alſo the galanthus, or common winter ſnow-drop, by ſome reſemblance in their flowers, but they are very different from each other, in that the flowers of *Leucojum* have ſix petals, and the *Galanthus* but three, accompanied by a very ſingular nectarium in the centre.

There are three ſpecies,——the ſpring-owering—ſummer-flowering—and autumnal flowering, viz.

[1] LEUCOJUM *Vernum.*

*Vernal, or Spring Leucojum.*] Hath an oblong bulbous root; ſending up ſeveral flat leaves, ſix or eight inches long; and amidſt them an upright, channelled, hollow, naked ſtalk, about a foot high, terminated by a ſpatha, protruding one or two flowers on ſlender foot-ſtalks, drooping downward; flowering in March.

[2] LEUCOJUM *Æſtivum.*

*Summer Leucojum.*] Hath a large, oblong, bulbous root; crowned with ſeveral long, flat, broad leaves; and amidſt them an upright, thick, hollow ſtalk, fifteen or eighteen inches high; terminated by a ſpatha, protruding many white flowers, on ſlender footſtalks, drooping downward; flowering in May.

[3] LEUCOJUM *Autumnale.*

*Autumnal Leucojum.*) Hath a large oblong bulbous root; crowned with many narrow leaves; an upright, naked, hollow ſtalk; terminated by a ſpatha, protruding many white flowers, on long weak foot-ſtalks hanging downward, and very ſlender ſtyle; flowers in autumn.

Of theſe three ſpecies the two firſt are the moſt common to the Engliſh gardens.

They are all very hardy, durable in root, but annual in leaves and ſtalks, which ariſe from the root in ſpring, and decay in ſummer, &c. ſoon after they have flowered; but the roots abide for years, and encreaſe exceedingly by off ſets, which may be ſeparated every two or three years.

Their flower-ſtalks riſe immediately from the root, naked or leafleſs, and the flowers ſtand at top, each conſiſting of ſix oval petals, that coaleſce at their baſe, each flower droops in a ſnow-drop manner, ſucceeded by plenty of ſeed.

Conſidered as flowery plants, they are pretty ornaments for the borders, or any of the compartments contiguous to the principal walks and home-lawns; the roots may be had at the nurſeries, plant them in autumn, towards the front, in patches of three roots in each, ſetting them three inches deep; they will flower the following year, at their uſual time; and the roots may remain unremoved two or three years, when they will be encreaſed by off-ſets into large bunches, then ſhould be taken up for ſeparating the off-ſets, and the largeſt roots planted again for flowering, and the off-ſets in nurſery-beds for a year or two.

Their propagation is by off-ſets of the roots, as juſt obſerved, which they afford in tolerable plenty, and may be ſeparated every third year, in ſummer when their leaves decay, like other bulbs. See BULBUS.

They may alſo be raiſed from ſeed, but the ſeedling plants will be three or four years before they flower. Sow it in Auguſt or September, in a border of light earth half an inch deep; the plants will riſe in ſpring, which in the ſecond ſummer ſhould be taken up at the decay of the leaf, and planted in beds till they flower, then removed to the borders.

LIGHT. Light and air are as neceſſary for ennobling the principles of vegetation as for animal oeconomy.

It has been experienced that light is of ſuch infinite ſervice to the growth of vegetables, that it contributes exceedingly, both to facilitate their vegetation, and encreaſe their perfection and duration, for it is obvious that moſt plants are conſiderably more proſperous, and attain greater perfection in a free expoſure fully open to the light and air, than in ſhady places; the ſame is obſerved of fruits. Thoſe growing in a ſituation full to the light of the ſun, are generally more large and fair, ripen ſooner, and more perfectly, both as to beauty,

beauty, and richneſs of flavour, than ſuch as grow in the ſhade; the above reaſons, therefore, ſhould determine us to cultivate moſt of our principal plants and fruits in a ſituation open as much as poſſible to the full light, and influence of the ſun; though upon particular occaſions in the heat of ſummer, a ſhady place may be neceſſary for ſome ſorts of plants; not, however, where ſhaded and darkened by ſpreading trees, &c. but a border open above to the full light, and only ſhaded from the immediate rays of the ſun; but for the general crops, a perfectly open, ſunny, lightſome ſituation, free from the ſhade of ſpreading trees, is always the moſt eligible.

It is alſo obſervable of plants growing in garden-frames, green-houſes, &c. in winter, when, in time of ſevere weather, covers or ſhutters have been obliged to be continued long over the glaſſes, ſo as to exclude the rays of light, the plants thereby, for want of light, ſicken, grow pale, and aſſume an unhealthy appearance for a long time, the leaves often either decay or drop off; and frequently when the covers are continued very long without the admiſſion of Light, the whole plant in many ſorts gradually dwindles and periſhes. Great attention is therefore requiſite, in this caſe, when the ſeverity of the weather obliges us to uſe other covers beſides the glaſſes, to take every opportunity of a favourable day, or even an hour or two of a day to admit the light.

The ſame is alſo obſervable to plants in early hot-beds, ſuch as cucumbers, melons, &c, which, early in the year, require a covering of mats over the glaſſes every night, that if theſe additional covers are applied too ſoon in the afternoon, and continued late in the morning, ſo as to keep the plants long in darkneſs, it is a very conſiderable diſadvantage to their growth; as will cauſe them to grow weak, pale, and ſickly. Let, therefore, the plants in thoſe beds enjoy the light every day as long as poſſible, at leaſt from the ſun's riſing to its ſetting, or longer, if the temperature of the heat of the hot-bed, and that of the external air ſhall permit; for tho' the plants in hot-beds alſo grow on nights when in total darkneſs, yet continue them ſo but two or three days, the difference in growth, for want of day-light will ſoon appear.

Light being, therefore, ſo beneficial to plants in general, that to encreaſe it as much as poſſible to thoſe in frames, green-houſes, ſtoves, &c. it is neceſſary to paint the inſide of all theſe departments white, to reflect the rays of light as much as poſſible, but more particularly on nights, and in the day-time when the ſeverity of the ſeaſon requires covers or ſhutters over the glaſſes.

LIGUSTICUM, Lovage.

It furniſhes ſome tall herbaceous perennials and biennials, retained in gardens for variety and medical purpoſes; riſing with very large, radical, many-parted leaves, and erect branchy annual ſtalks, ſome two yards high, others not half a yard, terminated by large umbels of yellow flowers of but little beauty.

Claſs and order, *Pentandria Digynia.*

*Characters.*] CALIX, umbellate flowers, having both the general and partial umbel multiple, the general involucrum of ſeven unequal leaves, and the partial one three or four, and a ſmall five-parted perianthium to each floret. COROLLA, each floret of the umbel have five plane petals. STAMINA, five ſhort hair-like filaments, and ſimple antheræ. PISTILLUM, a germen under each floret, two ſtyles, and ſimple ſtigmas. PERICARPIUM, none, an oblong, angular, channelled, divided fruit to each floret, containing two oblong ſeeds.

The moſt material ſpecies are;

[1]LIGUSTICUM, *Leviſticum.*

*Leviſticum, or common Lovage.*] Hath a thick, fleſhy, deeply-penetrating perennial root; crowned by very large, many-parted, radical leaves, with broad lobes, having inciſions at top; upright, ſtrong, channelled ſtalks, branching ſix or ſeven feet high, and all the branches terminated by large yellow umbels.

This is the ſort commonly cultivated for uſe, and every part of the plant is aromatic and medicinal; good to expel wind, warm and comfort the ſtomach; but the ſeeds are rather the moſt material part.

[2]LIGUSTICUM *Scothicum.*

*Scottiſh Lovage.*] Hath a thickiſh, fleſhy, penetrating, perennial root; crowned by large doubly-trifoliate leaves, with broad, ſhort, indented lobes; upright, round ſtalks, half a yard high; terminated by ſmalliſh yellow umbels.

Both theſe ſpecies flower in June and July, and ripen plenty of ſeeds in autumn.

They are hardy plants, durable in root, but annual in leaf and ſtalk, though the ſecond ſort is alſo ſometimes biennial; both ſorts

ſorts may eaſily be raiſed from ſeed, and freſh plants from ſcattered ſeeds, will riſe ſpontaneouſly.

Both the ſorts may be admitted into large pleaſure-grounds, to encreaſe the variety of herbaceous perennials, and the firſt ſort alſo for medicine, and will proſper in any common ſoil and ſituation.

Their propagation is by ſeed in autumn or early in ſpring: ſow it in any bed or border broad-caſt, and rake it in. When the plants are three or four inches high, plant them out into beds of moiſt earth, two feet aſunder, and in autumn, thoſe intended for the pleaſure-ground ſhould be tranſplanted therein, but let thoſe for medical uſe remain in the beds.

LIGUSTRUM, Privet.

This genus furniſhes a hardy, deciduous, and ever-green ſhrub for the ſhrubbery; both varieties of one ſpecies, adorned with oblong entire leaves, and ſpikes of infundibuliforme white flowers, ſucceeded by black berries.

Claſs and order, *Diandria Monogynia.*

*Characters.*] CALIX, is monophyllous, tubular, and four-parted at top. COROLLA, is monopetalous, funnel-ſhaped, with a cylindric tube, cut at top into four oval ſegments. STAMINA, two filaments, and erect antheræ the length of the corolla. PISTILLUM, a roundiſh germen, ſhort ſtyle, and obtuſe bifid ſtigma. PERICARPIUM, a roundiſh ſmooth unilocular berry, having four ſeeds.

Modern botaniſts admit but of one ſpecies, the principal of which is deciduous, and the variety an ever-green.

'LIGUSTRUM *Vulgare.*

*Common Privet*;——Conſiſts of the two following varieties:

*Deciduous Privet.*] Hath a ſhrubby ſtem, branching erectly ten or twelve feet high, the branches numerous quite from the bottom, ſlender, pliable, and tough; ſpear-ſhaped-oval, oppoſite, cloſe ſitting, deciduous leaves, two or three inches long; and white flowers in thick erect ſpikes at the ends of the branches, ſucceeded by cluſters of black berries.

*Ever-green Privet.*] Hath a ſhrubby, ſtronger upright ſtem, branching more erectly, twelve or fifteen feet, having numerous branches quite from the bottom, of a pliable tough nature; ſpear-ſhaped, acute, oppoſite, dark ever-green leaves, about three inches long, and half as broad; and white flowers, in erect ſpikes at the ends of the branches, ſucceeded by bunches of black berries.

Both theſe ſhrubs flower in May and June, the flowers make a tolerable appearance, and are ſucceeded by the berries, furniſhing ripe ſeed in autumn, and frequently remain on the plants the greateſt part of winter.

The flowers are of one funnel-ſhaped petal, ſeparately ſmall, but being collected into cloſe ſpikes, are very conſpicuous.

Both the varieties of theſe ſhrubs are very hardy, durable in root, ſtem, and branches, which are able to reſiſt the ſevereſt cold with impunity, and as they branch numerouſly all the way from the bottom, cloſely garniſhed with leaves, and their berries remaining ſingularly ornamental great part of winter, renders them proper furniture for ornamenting the common ſhrubbery-compartments in aſſemblage; but the ever-green kind has the greateſt claim to eſteem, though both ſorts merit admittance in the ſhrubbery collection, to encreaſe the variety; hardly any ſituation or ſoil comes amiſs to them, either in open or ſhady places, even under the ſhade of other trees; and in the midſt of great towns and cities, particularly the deciduous kinds, as is evident in London, where vaſt quantities are brought to the markets, and hawked about the ſtreets, which are ready ſale, for the inhabitants to ornament their ſmall gardens, courts, and balconies.

Theſe ſhrubs are alſo often employed to form hedges in gardens, for which purpoſe, as they are cloſely branched to the very bottom, and thickly ſet with leaves, they are tolerably well adapted, and may be made to form a cloſe handſome hedge; but would adviſe the ever-green kind to be principally choſen for this uſe. See HEDGES.

The propagation of both ſorts is by ſeed, ſuckers, layers, and by cuttings; all in the open ground.

By Seed.—Sow the ſeed in October, November, or December, in a bed of common earth, an inch deep, or in drills that depth; or, as they do not grow the firſt year, they may be buried till next autumn, in pots in the ground, as practiſed for haws, and then ſowed as above. When the plants come up keep them hand-weeded, and when a year or two old, plant them out in nurſery rows to remain two or three years, then tranſplanted for good where wanted.

By Suckers.—Great plenty of ſuckers riſe annually from the roots, which may be taken up in autumn, winter, or ſpring, with roots, and planted in the nurſery as above.

By Layers.—Lay down ſome of the pliable young branches in the earth, in autumn or winter, and they will be well rooted by autumn following; then cut them from the ſtool, with their roots, and plant them in the nurſery for two or three years.

By Cuttings.—In autumn plant cuttings of the young ſhoots, eight or ten inches long, in a ſhady border, they will be properly rooted by next autumn, then plant them out in nurſery rows, to remain till winter.

LILIACEÆ, *Liliaceous Plants*, plants whoſe flowers reſemble thoſe of a lily.

Liliaceous plants are ſuch as have ſix regular petals, in the form of a lily; or three, or even one petal deeply divided into ſix ſegments, and aſſume a lily-flower form; all Liliaceous plants, however, have not flowers ſo large as the *Lilium*, ſome being conſiderably ſmaller.

As the *lilium*, or common lily, have no calix, ſeveral of the Liliaceous flowers are alſo deſtitute of a cup; and ſeveral have cups, which are all principally of that ſort of cup called a ſpatha.

The following are the principal Liliaceous plants, diſtinguiſhing thoſe without, and thoſe with cups, or ſpathas.

Without Cups.—*Lilium*, or common lily, all the ſorts—tulip, all the kinds—fritillary, and crown imperial—hyacinth—ſtar of Bethlehem—baſtard ſtar of Bethlehem—tuberoſe—aſphodelus—ſquill—hemerocallis, or day-lily—anthericum, or ſpiderwort—aloe—yucca, or Adam's needle—glorioſa, or ſuperb lily.

With Spathas, or Cups.—crocus—galanthus, or common ſnow-drop—leucojum, or great ſnow-drop—daffodil, narciſſus, and jonquil—crinum, or aſphodel lily—colchicum—iris, or flower-de-luce—hæmanthus, or blood-flower—gladiolus, or ſword-lily—Virginia ſpider-wort—amaryllis, including the Guernſey lily, belladenna lily, and Jacobæa lily, &c.—pancratium lily.

The greater part of all theſe Liliaceous plants of both claſſes are bulbous-rooted; ſome, however, have tuberous, and ſome fibrous roots; and all of them perennial in root, but annual in ſtalk.

They all produce ornamental garden-flowers, and moſt of them hardy enough to grow in the open ground; ſome for the green-houſe and ſtove.

The culture of each ſort, &c. is fully directed in their proper genera.

LILIUM, Lily.

This genus furniſhes a beautiful collection of bulbous-rooted, herbaceous, flowery perennials, of majeſtic growth, all proper for ornamenting the pleaſure-garden; riſing with erect annual ſtalks, three or four feet high, garniſhed with long narrow leaves, and terminated by noble cluſters of large, bell-ſhaped, hexapetalous flowers, of exceeding beauty.

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX, none. COROLLA, is large, bell-ſhaped, and of ſix long petals, narrow at the baſe, but widening gradually upward, in ſome ſorts erect, in others turned quite back, each of thick ſubſtance, keel-formed on the back, and a nectarium forming a longitudinal line behind near the baſe. STAMINA, ſix long ſubulate filaments, and oblong incumbent antheræ. PISTILLUM, an oblong cylindric, ſix-furrowed germen, and a cylindric ſtyle the length of the corolla, and a thick triangular ſtigma. PERICARPIUM, an oblong ſix-furrowed, trivalvular, trilocular capſule, filled with ſemi orbicular ſeeds lying over each other, in a double order.

This genus retains all the varieties of White Lily—Orange Lily—and Martagon Lily; this latter is very diſtinguiſhable from the two former, by having the petals of the corolla, revolute, or rolled back; but ſee each under its diſtinct head.

### *White Lily Kinds.*

Of theſe kinds there is only one ſpecies, but which comprehends ſeveral beautiful varieties, and the common White Lily, found in moſt gardens, is parent of them all, and all of which have large, white, ſcaley, bulbous, perennial roots, crowned with leaves from autumn till ſummer, and ſends up flower-ſtalks annually, terminated by the flowers, which in all the varieties are pure white, tho' with ſome variations.

LILIUM *Candidum.*

*White Lily*; of which there are the following varieties.

*Common White Lily.*] Hath a large ſquamous, bulbous root; crowned by a cluſter of long

long broad leaves, close to the ground, remaining all winter and spring; amidst them an upright firm flower-stalk, a yard or more high, garnished with many narrow leaves placed irregularly; and terminated by a long cluster of large open bell-shaped, pure white flowers, one above another, having the inside of the petals smooth.

*Varieties of this are*] Common white Lily with striped leaves——with purple-striped flowers—double-flowered.

The two following are also supposed to be varieties only of the common white Lily, differing from it principally in that the above kinds have generally erect flowers, and these have dependent or drooping flowers, and some other variations, as in their descriptions, viz.

*Dependent White Lily of Constantinople.*] Hath a large scaley bulbous root; with leaves and flower-stalks like the parent sort, only the stalk is more slender, the flowers smaller, and generally growing in a dependent or drooping position.

*Dependent, broad-stalked, most-floriferous white Lily of Constantinople.*] Hath a bulbous root, and leaves like the other; but the stalk large, broad, and flat, sustaining at top, a large bunch of pendent flowers, from fifty or sixty to a hundred in number.

All the above varieties are by modern botanists arranged as varieties only of the *Lilium Candidum*, or common white Lily, obtained by the effects of culture; and that by continuing to encrease them by off-sets of the root, they will all retain their differences; and by seed more varieties may be gained.

They have all great merit in the beauty of their flowers, which have also great fragrance, particularly all the single-flowered kinds; but the double sort having often such a multiplicity of petals as to exclude the stamina and antheræ, the parts from which the effluvia proceeds, that they are frequently destitute of fragrance. All the sorts, however, demand attention as flowery plants, and are all so exceeding hardy as to prosper in almost any soil and situation without trouble; and if intermixed with each other, and the other species of this genus, they will exhibit a delightful variety, in the beauty of their elegant flowers; and the striped-leaved variety merits double esteem, for being not only ornamental in its flowers, like the others, has great singularity in its finely-striped leaves which being long, broad, and elegantly striped with yellow, spreading all around flat on the ground, and abiding, appear exceedingly ornamental, but more conspicuously so in winter and early spring.

They all flower in June and July, and their stalks decay in August, when the roots remaining for some little time at rest, is the only proper period for taking up the bulbs, when necessary, as hereafter observed.

### *Orange-Lily Kind.*

This furnishes only one species, but which, like the former, is prolific in some eminent varieties; all with large, roundish, scaley, bulbous, perennial roots; crowned with leaves in spring that decay in autumn and winter; and annual flower-stalks terminated by the flowers, which are universally of a reddish, or orange-colour, some more fiery than others.

[2]LILIUM *Bulbiferum.*

*Bulbiferous, or Bulb-bearing Lily.*—Of which there are the following varieties:

*Common Orange Lily.*] Hath a large squamous bulbous root; an upright firm flower-stalk, rising three feet high; very closely garnished with oblong, narrow, rigid, dark, shining leaves, placed irregularly; and the top crowned by a cluster of large, open, bell-shaped, erect-growing, orange-coloured flowers, rough within.

*Varieties of this*] With double flowers—with variegated leaves—dwarf-stalked.

All these sorts flower in June and July very conspicuously, and their stalks decay in August or September, when their roots remain at rest for two months, which is the time for removing them, when necessary, either to separate the off-sets, or transplant the main roots from one place to another.

They are all very hardy, and will thrive almost any where, no soil comes amiss to them, and grow freely either in open situations, or under shade of trees, or in towns among buildings, &c.

The stalks of these sorts remain fully adorned with leaves till the decay of the flowers, &c.

*Bulbiferous Fiery Lily.*] Hath a scaley bulbous root; an upright firm flower-stalk, half a yard or two feet high; garnished with narrow leaves, placed scattering; and bearing bulbs at the joints; and terminated by smaller upright, bright flame-coloured flowers.

*Varieties of this*] Greater broad-leaved bulbiferous Lily—many-flowered bulbiferous Lily—ſmall bulbiferous Lily—hoary bulbiferous Lily.

All theſe bulbiferous kinds flower ornamentally in May and June, at which time all the ſorts bear many ſmall bulbs on their flower-ſtalks, which are embryo plants, and if taken off when the ſtalks decay, and planted in any bed or border, they will readily grow, and flower the ſecond year. All the ſorts, however, encreaſe alſo abundantly by off-ſets of the root, and may be taken off in autumn, as obſerved above for the Orange Lilies.

Theſe ſorts are alſo all as hardy as the Orange Lilies, and will grow in any ſoil and ſituation.

*Martagon Kinds.*

There are ſeveral ſpecies, all of which differ from the white and orange Lily kinds, in having the flowers reflexed, and the petals of the corolla revolute, or rolled quite back; they have all large, ſcaley, bulbous, perennial roots; leaves and flower-ſtalks riſing annually in ſpring, ſurmounted by many flowers, generally in a reflexed or drooping poſition, and with all their petals turned back toward the ſtalk.

[3]LILIUM *Martagon.*

*Old Purple Martagon, or Turk's Cap.*] Hath a large ſquamous bulbous root; upright flower-ſtalk, three or four feet high, garniſhed with broadiſh leaves, in whorls, and terminated by large looſe ſpikes of purpliſh, black-ſpotted, reflexed flowers, with revolute petals.

*Varieties.*] Double flowered old Martagon—red old Martagon, with hairy ſtalks—imperial old Martagon, with divided ſtalks.

This ſpecies and varieties have been long inhabitants of our gardens; they all flower in June, have a good appearance, but impart a diſagreeable odour.

[4]LILIUM *Pomponium.*

*Pomponey Martagon.*] Hath a large ſcaley bulbous root; an upright flower-ſtalk, three or four feet high; garniſhed with narrow awl-ſhaped leaves, placed ſparſedly; and the top terminated by many reflexed, bright-red flowers, having revolute petals.

*Varieties.*] Pomponey double red Martagon—white pomponey Martagon——double white Martagon—red ſpotted Martagon——white-ſpotted pomponey Martagon—yellow pomponey Martagon—yellow-ſpotted pomponey Martagon—early ſcarlet Martagon—major ſcarlet pomponey Martagon.

All theſe pomponey Martagons flower in June, and make a fine appearance, their flowers being large and numerous.

They are hardy, grow freely any where, and may be propagated plentifully by off-ſets when their ſtalks decay.

[5]LILIUM *Chalcedonicum.*

*Chalcedonian Scarlet Martagon.*] Hath a large bulbous root; an upright thick flower-ſtalk, three feet high; cloſely garniſhed with broad ſpear-ſhaped leaves, placed irregularly; and terminated by ſeveral large, reflexed, bright-ſcarlet flowers, with revolute petals.

*Varieties.*] With deep-ſcarlet flowers——with purple flowers—with large bunches of flowers.

They all flower in July, and make a very fine appearance; will grow any where, and multiply faſt by off-ſets of the root.

[6]LILIUM *Superbum.*

*Superb Great Yellow Martagon.*] Hath a large, ſcaley, bulbous root; ſtrong upright ſtalk, four or five feet high; garniſhed with broad, ſpear-ſhaped, ſparſed leaves; and terminated by numerous, large, reflexed, revolute, yellow flowers, in a pyramidal cluſter; flowers in June or July.

This makes a noble appearance, and is worthy of a place in every collection.

[7]LILIUM *Canadenſe.*

*Canada Spotted Martagon.*] Hath a large ſcaley bulbous root; an upright ſtrong ſtalk, riſing four or five feet high; garniſhed with oblong pointed leaves, in whorls; and terminated by numerous, large, bell-ſhaped, reflexed, yellow flowers, ſpotted with black, having the petals ſcarcely revolute.

This flowers in Auguſt, is a fine majeſtic plant, and makes a grand appearance during the time of its blow.

*Variety*] With deep yellow flowers.

All theſe ſeven ſpecies of *Lilium*, and reſpective varieties, are univerſally bulbous in root, as before obſerved, very large, compoſed of numerous ſquamæ, or ſcales, encreaſe conſiderably by off-ſets, and are all perennials; but are annual in ſtalk, which always riſe directly from the root in ſpring, crowned immediately with the flower buds, which in all the ſorts, ſtand naked without any ſort of calix or cup; each flower is large and of ſix oblong petals, blowing in perfection principally in June, July, and Auguſt, ſucceeded

ceeded by ſeed in autumn; then the ſtalks decay, and the roots ceaſe to grow for ſome ſpace of time that ſeaſon; which period of reſt, before the bulbs begin again to grow, is the proper time to remove them, when neceſſary, either to ſeparate the off-ſets for encreaſe, or to tranſplant the main roots into another place, or to take them up for ſale, &c.

They all demand eſteem as plants of ornament for the beauty of their flowers, which are ſtrictly noble, and ſome of the grandeſt that adorn our gardens, though on account of their commonneſs and eaſy culture, are rather diſregarded; but even the moſt common ſorts of them claim attention as flowery plants, as for inſtance, the white Lily, very common in moſt places, is nevertheleſs a very elegant flower, it adorning the top of the ſtalk in a vaſt cluſter of pure ſnowy white flowers, that whereſoever ſituated, it diſtinguiſhes itſelf ſingularly ornamental, and diffuſes a fragrant odour all around. All the others poſſeſſes alſo a proportionable degree of beauty and value for the embelliſhment of the pleaſure ground. Therefore all the ſpecies and reſpective varieties, are proper ornaments for every compartment of the pleaſure-ground; and if the different ſorts are properly intermixed, they will effect a moſt elegant variety, ſucceeding each other in blow, upwards of three months; obſerving if any ſorts are wanted particularly for ſhady or cloſe places, the common white Lily, orange Lily, and common Martagons, are the moſt eligible, for they will thrive under trees; and the orange Lily alſo often in ſmall gardens in the midſt of buildings, in towns and cities; but beſides planting all the ſorts for the beauty of their flowers, I would adviſe to have many of the ſtriped-leaved white Lily placed towards the fronts of the moſt conſpicuous compartments, for the beauty alſo of its leaves in autumn, winter, and ſpring, as already obſerved, which, if diſpoſed alternately with the common white Lily, whoſe leaves are entirely green, they will exhibit the more ſtriking variety.

One method of planting and general culture is the ſame for all the ſorts.

The proper time for planting and tranſplanting them is in autumn, when their flowers and ſtalks decay, which is generally in Auguſt and September, the roots being then at reſt for a ſhort ſpace of time, which is the only proper ſeaſon for removing them, and for procuring roots to plant; though the bulbs taken up at the above ſeaſon of reſt, may be kept out of ground, if neceſſary, till October or November: the white Lilies, however, do not ſucceed if kept long out of the earth, and all the others ſucceed beſt when planted again as ſoon as poſſible. The bulbs of all the ſorts are ſold at the nurſeries; their prices are very reaſonable, and the moſt proper time to apply for them is from the end of Auguſt till October, as above noticed.

Plant them ſingly in different parts of the the borders, and towards the front of the principal ſhrubbery clumps; placing them four or five inches deep, and at good diſtances from one another, obſerving to mix the different ſorts in the alternate way; that is, plant firſt a white, next an orange Lily, &c. ſtationing ſome forward, others more back in the ſeveral compartments to effect the greater ſhow of variety.

After being planted, none of the ſorts require any particular culture, for they will endure all weather at every ſeaſon; ſo no more is neceſſary than deſtroying weeds among them by hoe, and as ſome of them run up with pretty tall ſlender ſtalks, they, if ſupported with ſticks to preſerve effectually their upright poſition, their flowers will always appear to the beſt advantage.

They may all remain undiſturbed two or three years, or longer, nor indeed is it proper to remove theſe ſorts of bulbs oftener, for by remaining they flower ſtronger after the firſt year, and having encreaſed by off-ſets into large bunches, many ſtalks will riſe from each bunch of roots, ſo as to exhibit a large cluſter of flowers; it is, however, proper to take up the bulbs entirely every three or four years at leaſt, at the decay of the ſtalk, to ſeparate the encreaſed off-ſets both for propagation, and to diſburthen the main roots, and give them room to take their proper growth.

Obſerve, that when deſigned to remove any of theſe kinds of bulbs, the proper ſeaſon for it is in ſummer and autumn, July, Auguſt, and September, when their flower-ſtalks decay, and the bulbs done growing, before they begin again to emit freſh fibres below, and to form any ſhoot at top, after which effort of growth, it is improper to remove them that ſeaſon, which would prevent their flowering the following year, and ſome ſorts probably

Probably not the year after in due perfection, for it weakens thoſe large kinds of bulbs conſiderably when removed at an improper ſeaſon; mark, therefore, the above mentioned time for removing the roots of all theſe ſpecies; for when having done their year's growth, at the decay of the flower and ſtalk, they become inactive for ſome time, not drawing any nouriſhment, and at which period they may be ſafely removed; but as ſome ſorts very ſoon begin again to emit new fibres at bottom, and form the ſhoot of the future leaves and flowers, which is particularly the caſe of all the white Lily tribe; ſo that when neceſſary to remove the roots, obſerve the proper time, as above, and never remove any of the ſorts after they have begun to ſhoot again, if you would inſure the next year's bloom and proſperity of the bulbs. I would, however, remark, that as ſome ſorts, ſuch as the orange Lily kinds, &c. do not begin to puſh new leaves till towards ſpring, the roots may more ſafely be removed, if neceſſary, any time from the decay of the flower and ſtalk, till toward Chriſtmas: but would obſerve on the other hand, that the ſooner the removal or planting is performed after the decay of the ſtalk, the better; for all bulbs planted early in autumn, flower ſtronger than ſuch as are planted a month or two later. See BULBUS.

Such bulbs, however, which are removed at the proper period of reſt may, if occaſion require it, be kept out of ground a month or two, eſpecially in dry ſand or moſs, or the like, to keep them from drying and ſhrinking by the air; but the retention of theſe roots long out of the earth, ſhould only be practiſed, either when neceſſary to keep them for ſale, or to ſend to any diſtance, or that the ground is not ready for their reception, and ſuch like occaſions; though they ſhould never be kept out of ground longer than October, or November at lateſt; the white Lily kinds in particular, ſhould be kept but as ſhort a time as poſſible above ground.

*Propagation of all the Sorts.*

The propagation of all the ſorts is moſt commonly by off-ſets of the root; they may alſo be raiſed from ſeed to obtain new varieties.

By Off-ſets.—All the ſorts of theſe roots yield off-ſets abundantly every year, which when greatly wanted for propagation, may be taken off annually in autumn, otherwiſe once in two or three years, according as they are wanted; and the proper time of the year is in ſummer and autumn, when the flower is paſt and the ſtalks decayed, as obſerved above; obſerving, that in order to ſeparate the off-ſets properly, the whole ſhould be taken up, and all the off-ſets, ſmall and great, ſeparated from the main bulbs: the ſmall off-ſets ſhould then be planted in beds a foot aſunder, and three deep, to remain a year or two; and the large bulbs ſhould be planted again in the borders, &c. ſingly; the off-ſets alſo in the nurſery beds, after having obtained ſize and ſtrength for flowering in perfection, may be planted out where wanted.

By Seed.——This is ſometimes practiſed, but more particularly for the Martagons, to obtain more varieties. In autumn, ſoon after the ſeed is ripe, ſow it in pots or boxes of rich light earth, half an inch deep; place the pots in a ſheltered ſituation all winter, and the plants will appear in the ſpring; when in April remove the pots to have only the morning ſun all the ſummer, giving moderate waterings; in Auguſt tranſplant the bulbs into nurſery-beds in flat drills an inch deep, and three or four aſunder, but as the bulbs will be very ſmall, ſcatter the earth and bulbs together in the drills, and cover them with earth the above depth; and having growed here till Auguſt or September following, tranſplant into another bed, placing them eight or nine inches each way aſunder, here to remain to ſhow their firſt flowers, then tranſplant them finally into the pleaſure-ground.

LINUM, Lint, or Flax.

This genus conſiſts of herbaceous annuals and perennials of erect growth, proper both for valuable oeconomical uſes, and to form variety in gardens. The common flax being a moſt valuable annual for field culture, for the bark of its ſtalks to make linen, and its ſeeds linſeed-oil; and ſome of the perennials ſerve to adorn the pleaſure-ground; all of them riſing with erect ſtalks from about two to four or five feet high, garniſhed with narrow leaves, and terminated by ſmall funnel-ſhaped quinquepetalous flowers.

Claſs and order, *Pentandria Pentagynia.*

*Characters.*] CALIX, five ſpear-ſhaped permanent leaves. COROLLA, is funnel-ſhaped, conſiſting of five oblong petals. STAMINA, five awl-ſhaped filaments, and arrow-ſhaped antheræ. PISTILLUM, an oval germen, five filiforme ſtyles, and reflexed ſtigmas.

ſtigmas. PERICARPIUM, a globular, pentagonous, quinquevalvular, decemlocular capſule, having one oval plane ſeed in each cell.

There are many ſpecies, but not more than one proper for oeconomical uſes, which is the common Flax, an annual; and one ſometimes cultured in gardens for variety, a perennial.

1 LINUM *Uſitatiſſimum.*

*Moſt Uſeful, or Common Cultivated Annual Flax.*] Hath a taper fibrey root; upright, ſlender, unbranched ſtalk, two feet and a half high; garniſhed with narrow, ſpear-ſhaped, alternate, grey coloured leaves; and the ſtalk dividing into foot-ſtalks at top, terminated by ſmall, blue, crenated flowers, in June and July; ſucceeded by large round capſules of ten cells, containing each one ſeed.

This may be ſaid to be one of the moſt valuable plants in the whole vegetable kingdom; as from the bark of its ſtalks is manufactured the Flax, or Lint, for making all ſorts of linen cloth; from the rags of the linen is made paper; and from the ſeeds of the plant is expreſſed the linſeed oil, ſo uſeful to phyſicians as well as painters, and other trades.

The plant is annual, and is raiſed in fields like corn. See its *Culture.*

2 LINUM *Perenne.*

*Perennial Siberian Flax.*] Hath a fibrated perennial root, ſending up annually ſeveral upright annual ſtrong ſtalks, branching four or five feet high; garniſhed with ſmall, narrow, ſpear-ſhaped, alternate, dark-green leaves; and terminated by umbellate cluſters of large blue flowers in June, ſucceeded by ſeeds in autumn.

Both theſe ſpecies of *Linum* are hardy, the firſt is but of one year's duration, the ſecond of many by the root, but is annual in ſtalk.

The firſt is cultivated in fields for the uſes before obſerved, but rarely in gardens, except a few plants in patches for variety; it riſes from ſeed in ſpring, ſhoots up into ſtalk gradually arriving to its full height in June and July, and having ſtood to perfect its ſeed, is then pulled and prepared for uſe.

The perennial ſort is proper furniture for any of the large borders, or other parts of the pleaſure garden to encreaſe the variety.

*Propagation of both Sorts.*

The propagation of both theſe plants is by ſeed in ſpring; the common ſort is ſowed in fields, as hereafter directed; and the perennial ſort in a bed or border of common garden-earth, in ſhallow drills ſix inches aſunder; and when the plants are two or three inches high, thin them to the ſame diſtance, and in autumn may plant them out where wanted, where they will abide by the roots many years, producing new ſtalks every ſpring.

But with reſpect to the general culture of the common Flax, this is raiſed in great quantities in fields in many places, both for the ſake of its ſtalks to afford the flax for linen, and its ſeeds for oil, as above noticed.

It ſhould have as good ground as poſſible, and this prepared for the reception of the ſeed, by proper repeated ploughings, and harrowings, to render the ſoil fine, and the ſurface even; and March and beginning of April is the ſeaſon for ſowing it: about two buſhels is the proper quantity for an acre. It may be ſowed either broad-caſt, and harrowed in with a light harrow, or may be ſowed in ſhallow drills eight or ten inches aſunder, though the former is the moſt expeditious method; but by having it in drills, the ground can be readily hoed to deſtroy weeds, and which by looſening the ground, will prove alſo very beneficial to the crop of Fax, nor will the plants be liable to be trodden down as when they grow promiſcuouſly.

Weeds, however, muſt at any rate be kept down, either by repeated hand-weedings, or by hoeing, as ſhall be convenient, which ſhould be ſtrictly attended to while the plants are young, and until they are grown above the reach of the weeds.

In the middle or latter end of Auguſt, the plants will be arrived at full growth, begin to turn yellow at bottom, and brown at top, and their ſeeds ripen, it is then the proper time to pull them, though if it was not for the ſake of the ſeed, they might be pulled a little before the ſeeds ripen, whereby the Flax is generally better coloured and finer; but if ſuffered to ſtand till the ſeeds are fully ripe, it is commonly ſtronger, ſomewhat coarſer and more in quantity. It ſhould be pulled up by handfulls, roots and all, ſhaking off all the mould; then either ſpread them on the ground by handfuls, or bind them in ſmall bunches, and ſet them upright againſt one another, for ten days or a fortnight, till they are perfectly dry and the ſeed ripened; then ſhould be houſed, and the ſeeds threſhed out; winnowed and properly dried in an airy room, and then put up for uſe; the flax ſhould then be rippled and ſorted, and afterwards carried

to

to a pond or canal of water, and laid to ſteep, covering it down with ſtraw hurdles, or the like, laying ſtones on them; and are to remain till the ſtalks become brittle, and the bark or rind, the uſeful part, ſeparate readily from the reed; it is then properly ſteeped, when it muſt be taken out and ſpread by handfulls in ſwaths to dry, turning it occaſionally till properly bleached and dried, and it is then ready for the flax dreſſer.

LIQUIDAMBAR, Sweet Gum-tree.

This genus furniſhes two beautiful deciduous trees for ornamental plantations, growing thirty or forty feet high, forming fine pyramidal heads, adorned with large angular and oblong leaves, and monoecious apetalous flowers.

Claſs and order, *Monoecia Polyandria.*

*Characters.*] CALIX, male and female apetalous flowers, apart on the ſame tree, the males numerous in conical looſe catkins, and females in a globe, at the baſe of the male ſpike; the males having a four-leaved involucrum, which in the females is double; and each floret a bell-ſhaped proper cup. COROLLA, both male and female florets are apetalous. STAMINA, numerous ſhort filaments, incorporated in a body; and didymous, four-furrowed, bilocular, erect antheræ. PISTILLUM, an oblong germen, two ſubulate ſtyles, and recurved downy ſtigmas. PERICARPIUM, many unilocular, bivalvular capſules, collected into a globular ligneous body, having many oblong ſeeds.

There are but two ſpecies, both of America, but very hardy trees, of the deciduous tribe, and are ſingular for producing a liquid, tranſparent, gummy ſubſtance of great fragrance.

1 LIQUIDAMBAR *Styraciflua.*

*Styraciflua, or Maple-leaved Virginia Liquidambar.*] Riſes with an upright ſtraight ſtem, and regular branchy head, thirty or forty feet high; palmated-angulated leaves, of five ſerrated lobes; exſuding a glutinous fragrant ſubſtance; and ſaffron-coloured flowers in amentums at the ends of the branches in April; ſucceeded by large roundiſh fruit, having many protuberances.

2 LIQUIDAMBAR *Aſplenifolia.*

*Spleenwort-leaved Canada Liquidambar.*] Riſes with an upright ſtem, branching twenty or thirty feet high; oblong leaves, ſinuated on the edge alternately very deep; and ſaffron-coloured flowers in amentums, ſucceeded by roundiſh fruit.

Both theſe trees have great merit for the embelliſhment of the ſhrubbery plantations, in aſſemblage with others of the deciduous tribe of ſimilar growth; and being handſome ſtraight-growing trees, forming fine heads, attaining their proper height in this country, are alſo well adapted for planting detached as ſingle objects in ſpacious graſs opens to diſplay their fine pyramidal growth; in which they will appear very ornamental, and by emitting their odoriferous particles, will perfume the circumambient air in ſummer.

They proſper in any common ſoil and ſituation, and endure our ſevereſt cold without injury.

Both the ſorts are retained in the nurſeries for ſale, but the firſt is the moſt common.

Their propagation is by ſeed, and by layers, in the full ground.

By Seed.—The ſeed arrives from America in ſpring, when it ſhould be ſowed as ſoon after as poſſible, in a bed of light earth, half an inch deep, and the plants will riſe ſome the ſame year, others probably not till the ſpring following; indulge them with moderate waterings occaſionally; keep them clean from weeds all ſummer, and give protection from ſevere froſt, the firſt two winters; and when two years old, plant them out in ſpring in nurſery rows, two feet aſunder, to remain three or four years, or till wanted for the ſhrubbery, &c.

But ſome perſons ſow the ſeeds in pots, &c. in order to move to different ſituations as the ſeaſon requires; and that if the plants ſhould not come up the ſame year, the pots may be plunged in a hot-bed the ſpring following to forward them.

By Layers —— In autumn lay the young ſhoots of the preceding ſummer, by ſlit-laying, &c. and they will moſt of them be rooted by autumn following, though in a dry hungry ſoil they are ſometimes two years before they are ſufficiently rooted for tranſplantation.

LIRIODENDRON, Tulip-tree *(Tulipifera).*

One large hardy deciduous tree, of North America, for ornamental plantations, conſtitute this genus, adorned with large, broad, lobated leaves, and hexapetalous liliaceous flowers, fancied to reſemble the form of a tulip; hence the name Tulip-tree.

Claſs and order, *Polyandria Polygamia.*

*Characters.*]

*Characters.*] CALIX, a two-leaved involucrum, and three-leaved inner cup, all deciduous. COROLLA, is bell-ſhaped, and conſiſts of ſix petals, in two ſeries, obtuſe and channelled at the baſe, the outer three are deciduous. STAMINA, numerous linear filaments, having narrow antheræ faſtened longitudinally to their ſides. PISTILLUM, numerous germina formed into a cone, no ſtyle, but a globular ſtigma crowning each germen. PERICARPIUM, none, numerous ſeeds collected imbricatumwiſe into a ſort of cone.

There is but one known ſpecies, which formerly was termed *Tulipifera*; but is now changed by Linnæus to *Liriodendron*, from the fancied reſemblance of its flower to a lily, whence it might with as much or more propriety be called Lily-tree as Tulip-tree.

LIRIODENDRON *Tulipifera*.

*Tulip-tree.*] Riſes with an upright large trunk, branching irregularly forty or fifty feet high; large lobated alternate leaves, of three lobes, the middle one truncated, thoſe of the ſides rounded; and from the ends of the branches bell ſhaped flowers, compoſed of ſix petals in a double ſeries, ſpotted with green, red, white, and yellow; appearing ornamentally in July, ſucceeded by large conic fruit, not ripening in England.

Some of theſe trees have acquired a large ſize and ſtature in England, and produce flowers, which they never effect till of ſome conſiderable age and bulk; the trunk is covered with a grey bark, and the younger wood of a blueiſh or browniſh colour, commonly very pithy, and when broken, emits a ſtrong aromatic odour, and the leaves are of ſingular ſtructure on long foot-ſtalks. In America ſome of theſe trees are thirty feet in circumference, with large very unequal and irregular boughs; and the timber is of great uſe in its native ſoil, particularly for making that kind of boat called periaugues, which are formed of the trunk, excavated or hollowed.

This curious tree grows freely here in the full ground, and is proper for our ornamental plantations, ſtationing them with the deciduous kinds of ſimilar growth; is alſo very proper to exhibit ſingly in large lawns and other ſpacious opens of graſs-ground.

It is cultivated for ſale in all the nurſeries.

Its propagation is by ſeed.—This is imported annually from America, which may be had of the ſeed-dealers in ſpring; and is then to be ſowed in the full ground, in beds of light earth, placing the ſeed length-wiſe, and cover it near an inch deep; they will come up the ſame year in May; obſerving to give water in dry weather, and if the bed is arched over with hoops, to have occaſional ſhade from the mid-day ſun in ſcorching weather, it will prove very beneficial to the germination of the ſeeds, and growth of the young plants, being alſo careful to continue the waterings occaſionally during the ſummer; and in the winter, if you allow them ſhelter of mats in froſty weather, it will effectually preſerve their tops, which being ſometimes a little tender the firſt year, are apt to ſuffer by froſt; however this covering is not always abſolutely neceſſary, for I have obſerved them ſtand very well without any. When they are two years old, plant them out in ſpring in nurſery-rows, two feet diſtant, and a foot aſunder in each row; there to remain a few years, till from three to ſix or eight feet high, then tranſplanted where they are always to ſtand.

LOBELIA, Cardinal-flower *(Repuntium.)*

It conſiſts of herbaceous and underſhrubby erect flowery perennials for the pleaſure-garden and hot-houſe, riſing with erect ſtalks from about two to five or ſix feet high, ornamented with oblong, oval, and ſpear-ſhaped, ſimple leaves; and ornamental ſpikes of beautiful, monopetalous, ſomewhat ringent, five-parted flowers.

Claſs and order, *Syngeneſia Monogamia.*

*Characters.*] CALIX, is ſmall, monophyllous, quinquedented, and growing round the germen. COROLLA, is monopetalous, a little ringent, and with a long cylindric tube, and five-parted limb, the two upper parts ſmalleſt, and form the upper lip, and the other largeſt and ſpreading. STAMINA, five ſubulate filaments, having ſyngeneſious antheræ. PISTILLUM, an acuminated germen under the corolla, cylindric ſtyle, and obtuſe hairy ſtigma. PERICARPIUM, an oval bilocular capſule, opening at top, and numerous ſmall ſeeds.

There are many ſpecies, but not more than three or four commonly cultivated, two hardy herbaceous kinds for the open ground, and two ſhrubby plants for the ſtove.

*Hardy Herbaceous Kinds.*

Theſe are fibrous-rooted, erect-growing perennials, natives of North America, but

have been long retained in the Engliſh gardens for the beauty of their flowers.

[1]LOBELIA *Cardinalis.*

*Common Cardinal Flower.*] Hath a thick, fibrated, milky, perennial root; crowned with lanceolate, ſerrated, radical leaves; upright, firm, round ſtalks, riſing two feet high; garniſhed with ſpear-ſhaped, ſawed, alternate leaves; and terminated by long ſpikes of beautiful ſcarlet flowers, in July and Auguſt.

[2]LOBELIA *Siphilitica.*

*Siphilitic Blue Cardinal Flower.*] Hath a thick, fibrated, perennial root; crowned with oval, lanceolate, crenated, radical leaves; upright firm ſtalks, half a yard high; garniſhed with leaves like the radical ones; and from the axillas, pale-blue flowers, with reflexed cups; appearing in July.

*Varieties.*] With deep-blue flowers—violet-coloured flowers.

Both theſe ſpecies flower very ornamentally, and the flowers numerous in long ſpikes; which in dry warm ſeaſons, are ſucceeded here by ripe ſeeds in autumn.

They are hardy enough to ſucceed in the full ground all the year in a dry warm ſoil, though as being liable to ſuffer by ſevere froſt a ſhare of them ſhould be retained in pots for moving to ſhelter of a frame in froſty weather.

*Tender Shrubby Kinds.*

[3]LOBELIA *Plumierii.*

*Plumier's Shrubby Lobelia.*] Hath a ſhrubby, ſomewhat ſucculent ſtalk, riſing five or ſix feet high; oval-oblong entire leaves, placed alternate; and from the ſides of the ſtalk, white flowers, growing by two or three together on long foot-ſtalks.

[4]LOBELIA *Surinamenſis.*

*Surinam ſhrubby Lobelia.*] Hath a ſhrubby ſtalk, riſing half a yard high; oblong, ſerrated, ſmooth leaves; and flowers from the axillas on very long foot-ſtalks.

[5]LOBELIA *Pinifolia.*

*Pine-tree-leaved Shrubby Lobelia.*] Hath a ſhrubby ſtalk, riſing a yard high; linear entire leaves in cluſters; and blue flowers from the ſides of the ſtalks.

The flowers of all theſe ſpecies of Lobelia conſiſt only of one petal, cylindrically tubular below, and divided at top into five parts, ſee the *Characters*; thoſe of the herbaceous kinds are ſometimes ſucceeded here by ſeeds, but rarely any of the others.

The two firſt ſpecies are very ornamental flowery plants, for the principal compartments of the pleaſure-garden; but being but moderately hardy, liable to ſuffer by ſevere froſt, it is proper to keep ſome alſo in pots to move to occaſional ſhelter in froſty weather, they produce extremely ſhowey garden-flowers; more particularly the *Lobelia Cardinalis*, in its beautiful ſcarlet ſpikes, occupying half the length of the ſtalks, conſiſting of numerous flowers; but both the ſorts make a fine appearance for a month or ſix weeks; ſo both demand a place in every curious collection, to encreaſe the variety of herbaceous flowery perennials, and for which purpoſe they have been long retained in moſt of our eminent gardens, and are kept in all the nurſeries for ſale.

The other three tender ſhrubby ſorts being natives of the hot parts of America, Aſia, and Africa, require a hot-houſe here, ſo muſt be kept in pots, and retained in that department, the firſt of them as the moſt common in the Engliſh gardens.

*Propagation.*

The two hardy herbaceous kinds are propagated by ſeed, cuttings of their ſtalks, and by parting their roots.

By Seed.—They riſe from ſeed one year, and flower the next, and abide ſeveral years. Sow the ſeed in autumn, or early in ſpring in a warm border, or in pots or boxes to move to different ſituations in different ſeaſons, to have ſhelter from froſt, and ſhade from the mid-day ſun in ſummer, &c. obſerving thoſe ſowed in autumn generally come up more freely the following ſpring than thoſe which are ſown in that ſeaſon; allow ſhelter in hard froſts, as juſt obſerved, either under a frame, or awning of mats, but ſhould be fully expoſed in all mild weather; giving occaſional watering in ſpring and ſummer. When the plants are come up two or three inches, prick them out in ſeparate ſmall pots of rich earth, give water, and place them in the ſhade till freſh rooted, repeating the waterings occaſionally in hot dry weather, and ſhift them into larger pots as they ſhall require; in winter move them into a frame to have occaſional ſhelter from inclement weather; and in ſpring, in March, ſome of them may be turned out into the full ground, when they will flower the enſuing ſummer; and ſome may be retained in pots to move to ſhelter in winter, to be as a reſerve in caſe thoſe

thoſe in the open air ſhould be killed by froſt; theſe will alſo flower at their uſual time in ſummer.

As theſe beautiful plants generally flower in the greateſt perfection in the firſt and ſecond year of their bloom, it is proper to raiſe a ſupply of new plants every year or two, in order to have them to flower in their utmoſt perfection annually.

By Off-ſets.—Both theſe hardy ſorts ſometimes afford off-ſets for young plants from their ſides at bottom, which may be ſeparated in autumn, and potted, and managed as for the ſeedlings.

By Cuttings.—In June, if ſome of the young ſtalks are divided into lengths of five or ſix inches, planted in an eaſterly border, two parts of three deep, covered down with hand-glaſſes, and watered occaſionally; they will emit roots, and form young plants in a month or ſix weeks; the glaſſes ſhould then be taken away, and manage the plants as above.

The tender kinds are propagated by ſeeds procured from abroad, ſowing them in pots of light ſandy earth, and plunged in the bark-bed; and when the plants are three inches high, plant them in ſeparate pots, and plunged alſo in the bark bed, giving water and occaſional ſhade till rooted.

Theſe ſorts muſt always remain in the hot-houſe, and have frequent moderate waterings.

LOCULAMENTA, *Loculi*, Cells, or Pockets, the internal diviſions, or departments of a capſule or other dry ſeed-veſſel.

Theſe *Loculi*, or Cells, are thoſe departments of a ſeed-veſſel which immediately contain and incloſe the ſeeds; and in point of number, ſome capſules have but only one Cell, others two, three, or many; when of one Cell it is termed *unilocular*; when of two, *bilocular*; of three, *trilocular*; of four, *quadrilocular*; of five, *quinquelocular*; of ten *decemlocular*; of many, *multilocular*, &c. each Cell having, ſome but one, others ſeveral ſeeds; it being various in different genera.

LONICERA Honeyſuckle.

This genus retains a grand collection of celebrated deciduous flowering ſhrubs and ſome ever-greens, proper for all ornamental plantations, conſiſting both of upright growers, and twining climbers, riſing from three or four to ten or twelve feet high; adorned with oblong, oval, and cordated moſtly oppoſite leaves, and a great profuſion of elegant monopetalous, tubular, five-parted, very fragrant flowers, moſt part of ſummer.

Claſs and order, *Pentandria Monogynia*.

*Characters.*] CALIX, is ſmall, five-parted, and reſts on the germen. COROLLA, is monopetalous and tuberous, having an oblong gibbous tube, divided above into five reflexed ſegments. STAMINA, five ſubulate filaments, and oblong antheræ. PISTILLUM, a roundiſh germen under the receptacle, filiforme ſtyle, and obtuſe capitated ſtigma. PERICARPIUM, an umbellicated bilocular berry, containing roundiſh compreſſed ſeed.

In this genus are now comprehended as ſpecies, ſeveral genera of former botaniſts, ſuch as the *Diervilla*, *Symphoricarpos*, or St. Peter's-wort, *Periclymenum*, &c. Linnæus diſcovering their flowers to poſſeſs equally the ſame *Characters* as Lonicera, has retained them all as ſpecies only of this genus.

They may be divided into two claſſes, the upright growers, and trailers.

*Upright Kinds.*

Theſe ſorts riſe with upright firm ſtalks, branching moderately, their branches moſtly ſupporting themſelves tolerably erect, forming low, upright, buſhy heads; they are all hardy, deciduous, and moſt of them produce ornamental flowers, which however, are rather inferior both in numbers, beauty, and fragrance, to thoſe of the trailing kind, but they nevertheleſs exhibit a pleaſing elegance, and agreeable variety, in their general appearance; and are very proper furniture for the ſhrubbery.

The ſpecies of the above kinds commonly retained in our gardens are:

LONICERA *Alpigena*.

*Alpine Upright Red-berried Honeyſuckle.*] Riſes with a ſhrubby, ſhort, thick, upright ſtem, branching ſtrong and erectly, four or five feet high; largiſh ſpear-ſhaped leaves, in pairs oppoſite; and from the ſides of the branches many red flowers, by twos on long footſtalks; each ſucceeded by two red berries joined together at their baſe; flowers in April and May, and the berries ripen in autumn.

[2]LONICERA *Cærula*.

*Blue-berried Upright Honeyſuckle.*] Riſes with a ſhrubby upright ſtem, branching moderately three or four feet high, the branches

covered with a purpliſh bark; oblong-lanceolate leaves, by pairs oppoſite; and from the ſides of the branches, many white flowers by twos on ſhort foot-ſtalks, each ſucceeded by a pair of blue berries joined together at the baſe: flowers in May, and the berries ripen in Auguſt.

[3]LONICERA *Nigra.*

*Black berried Upright Honeyſuckle.*] Riſes with a ſhrubby upright ſtem, branching three or four feet high; oblong, elliptical, entire leaves; and white flowers, ſucceeded by black berries, ſingle and diſtinct; flowering in May.

[4]LONICERA *Xyloſteum.*

*Xyloſteum, or Fly Honeyſuckle.*] Riſes a ſhrubby, ſtrong, upright ſtem, branching ſeven or eight feet high, the branches having a whitiſh bark; oblong-oval, downy leaves, in pairs oppoſite; and from each ſide of the the branches, erect white flowers, each ſucceeded by large double red berries, joined together at their baſe; flowers in June, and the berries ripen in September.

[5]LONICERA *Tartarica.*

*Tartarean Honeyſuckle.*] Riſes with a ſhrubby upright ſtem, branching erectly three or four feet high; heart-ſhaped oppoſite leaves; and whitiſh erect flowers, ſucceeded by red berries, ſometimes diſtinct and ſometimes double.

[6]LONICERA *Diervilla.*

*Diervilla, or Yellow-flowered Acadian Honeyſuckle.*] Riſes with ſhrubby upright ſtalks, branching erect, but moderately, three or four feet high; oblong, heart-ſhaped, pointed, ſerrated leaves, by pairs oppoſite; the branches terminated by racemus cluſters of pale-yellow flowers; flowers in May and June, continuing ſometimes till autumn, but rarely ripens ſeed here.

[7]LONICERA *Symphoricarpos.*

*Symphoricarpos, or Shrubby St. Peter's Wort.*] Riſes with a ſhrubby rough ſtem, branching erect four or five feet high, the branches ſlender and numerous; cloſely garniſhed with ſmall oval oppoſite leaves on ſhort foot-ſtalks; and ſmall greeniſh flowers round the ſides of the ſtalk; appearing in Auguſt.

*Trailing, or Climbing Kinds.*

Theſe ſorts have moſtly weak declinated ſtalks and branches, which, unleſs ſupported, trail along the ground, ſome ſorts rambling to a great length; but having ſupport of ſtakes, or ſtems of trees, &c. they will climb or twine round them many feet high, and often climb over the adjacent ſhrubs, hedges, or other ſupport in their neighbourhood, for they are all volubilate climbers, aſcending by twining ſpirally round any ſupport, generally to the left, according to the apparent motion of the ſun; they alſo, if trained againſt arbours, ſeats, walls, pales, &c. may be extended a conſiderable length, in the ſpace of one ſummer; ſome of the ſorts may alſo with a little trouble be trained as ſtandards, as hereafter directed.

They are moſtly of the deciduous tribe, except one ſpecies, and one or two varieties, which are ever-green: ſeveral of the ſorts are remarkable for having the upper leaves ſitting cloſe, uniting at their baſe, ſo as to appear perforated by the ſtalk or branch; and all the ſorts are remarkably floriferous; the flowers elegant and fragrant, generally continuing a month or two in ſucceſſion, and the evergreen kinds much longer.

The moſt material ſpecies of the above kinds are:

[8]LONICERA *Periclymenum.*

*Periclymenum, or Common Climbing Honeyſuckle.*] Comprehends two principal varieties; Engliſh wild honeyſuckle—Dutch honeyſuckle, &c. each of which furniſhing alſo ſome varieties.

*Engliſh Wild Honeyſuckle, or Woodbine of our Woods and Hedges.*] Riſes with ſhrubby, weak, very long, ſlender ſtalks and branches trailing on the ground, or climbing round any ſupport, and extend many feet in length; oblong-oval oppoſite leaves, diſtinct on ſhort foot-ſtalks; and all the branches terminated by oval imbricated heads, furniſhing ſmalliſh flowers of different colours in the varieties; flowering from June or July until autumn.

*Varieties of this*] With white flowers—with red flowers—with ſtriped leaves—oak-leaved, having the leaves ſinuated, or cut on the edges like thoſe of the oak-tree—ſtriped oak-leaved.

This ſpecies grows wild in England in great plenty in woods and hedges, and produce abundance of flowers, which however are ſmall, but by garden-culture they are much improved: the plant and all its above varieties have generally very weak trailing ſtalks and branches, that they cannot be trained with upright ſtems, and their flowers are generally ſmall; a few plants of each, however, are proper to introduce as climbers, to encreaſe the variety among the others.

The

The following varieties grow much ſtronger, and produce large and more elegant flowers.

*Dutch, or German Honeyſuckle.*] Riſes with a ſhrubby declinated ſtalk; and ſtrong ſhooting, long, trailing, purpliſh branches, advancing a conſiderable length; oblong-oval oppoſite leaves, diſtinct, on ſhort foot-ſtalks; and all the branches terminated by oval imbricated heads, furniſhing large beautiful red flowers, of fragrant odour; appearing in June and July.

*Varieties of this*] Long-blowing, red, German honeyſcuckle—late red-flowering——ever green late red-flowering, retaining its leaves all the year, and often its bloom till near Chriſtmas.

[9]LONICERA *Caprifolium.*

*Caprifolium, commonly called Italian Honeyſuckle.*] Riſes with ſhrubby declinated ſtalks, ſending out long, ſlender, trailing, twining, greeniſh branches; oval, cloſe-ſitting, leaves, by pairs oppoſite, the upper ones cloſely join at their baſe, appearing perforated by the branch; and all the branches terminated by verticillate or whorled bunches of cloſe-ſitting flowers of great fragrance, of different colours and time of flowering in the varieties.

*Varieties of this*] Early white-flowering, appearing in May—early red-flowering; appearing alſo in May—late red-flowering, appearing in June and July, and is a fine ſort—yellow flowered——ever-green red-flowering, the leaves large, thick, and remain all the year; and it flowers from June until the end of autumn.

This ſpecies and varieties are eaſily diſtinguiſhed, by producing their flowers in whorled bunches, appearing as if three or four bunches grew out of one another; are large, numerous, and ſweetly ſcented.

The following is alſo valuable for its large elegant flowers, but are almoſt devoid of ſcent.

[10]LONICERA *Sempervirens.*

*Ever-green Trumpet-flowered Honeyſuckle.*] Riſes with a ſhrubby declinated ſtalk, ſending out ſlender, long, trailing, reddiſh branches; oblong-oval, cloſe-ſitting, ſhining, ever-green leaves, in pairs oppoſite, the upper ones cloſely join at the baſe, appearing perforated by the ſhoot, and all the branches terminated by naked verticillate ſpikes of long, unreflexed, deep-ſcarlet flowers, of great beauty, but little fragrance.

This ſpecies and following varieties of it are alſo diſtinguiſhable by their flowers growing in whorled ſpikes.

*Varieties of this*] Large Virginia trumpet-honeyſcuckle, having large bright-ſcarlet flowers——minor Carolina trumpet-honeyſuckle, with ſmaller ſcarlet flowers.

Theſe are all the principal ſorts of *Lonicera* that merit culture in our gardens, and that are to be met with in the nurſeries for ſale.

The flowers of all the ten ſpecies and reſpective varieties, are of one ſingle, oblong, tubulous petal, it having the lower part a long tube, enlarging at top, and deeply divided into five, moſtly reflexed ſegments, (ſee the *Characters*) and thoſe of moſt of the ſorts are ornamental, but preference is due to thoſe of the trailing kinds, and which poſſeſs alſo the greateſt fragrance.

The plants of all the ſorts are ſhrubby, durable in root, ſtem, and branches; and ſo hardy as to grow in any common ſoil and ſituation, both in open expoſures, and under ſhades of trees, more particularly the trailing kinds.

They are all admirable furniture for ornamental plantations in gardens, both for the variety of their different growths, and ornament and fragrance of their flowers; though the flowers of the upright kinds are not ſo ſhowy as thoſe of the trailers; but they, however, exhibit an exceedingly agreeable variety. Thoſe of the trailing ſpecies have certainly the greateſt merit both in their numbers, ſize, elegance, and odour, as well as in duration: however, the ſhrubs of all the ſorts are proper to be introduced as plants of ornament in every ſhrubbery; the upright kinds to intermix as ſtandard ſhrubs, they having upright firm ſtems, and erect moderate-ſhooting branches, forming handſome heads; but the trailing kinds, whoſe branches are great ramblers, and without ſupport, trail along the ground, ſhould generally be introduced as climbers, having ſtout ſtakes placed to each for them to climb upon, which they effect by aſcending ſpirally round the ſupport, to a conſiderable height; and may alſo be placed to aſcend round the ſtems of trees, and to climb among the boughs of the adjacent buſhes, ſhrubs, and hedges, which they will effect in a very agreeable manner, by interweaving their branches therewith, mount aloft, ſpread about, and ſhow their flowers at top, appearing as if produced from the plant upon which they climb. In this manner may all the ſorts of *Lonicera*, both upright growers, and climbers, be made to ornament our gardens.

I ſhould

I ſhould adviſe to diſperſe plenty of the different trailing *Loniceras* near the ſides of all the principal walks, both for the beauty of their flowers, and for the delightful odour they conſtantly emit all around.

Theſe climbers are likewiſe proper for training againſt walls, &c. for the ornament and fragrance of their flowers, training their branches four or five inches aſunder; obſerving to thin out the ſuperabundant ſhoots annually, and train in ſome of the moſt robuſt for ſucceſſion wood, either at full length, or ſhortened as it may ſeem proper for the ſpace deſigned to fill.

Having obſerved above, that the trailing kinds are principally adapted for climbers, I would however remark, that with a little pains they may alſo be made to form low buſhy ſtandards; this is done by training them at firſt to one upright ſtem, by means of ſtakes, and prune their rambling young ſhoots every year, as ſhort as you ſhall ſee occaſion, ſo as to keep them within proper bounds; by this practice they may be made to form tolerable ſtandard ſhrubs, with erect firm ſtems, and buſhy heads.

The ever-green kinds of theſe ſhrubs are principally all of the trailing tribe, and have ſingular merit, not only in their ever-green foliage, plentitude, and elegance of their flowers, but in their long continuance in bloom, which is frequently from June till November, and ſometimes till Chriſtmas, and after, in mild ſeaſons; and thoſe of the *Lonicera Caprifolium*, or Italian kind, impart a moſt agreeable fragrance: all of which kinds having long trailing twining branches, will form beautiful climbers; they may alſo be trained as ſtandards by the means of ſupporting their ſtems at firſt, and ſtopping their young ſhoots as hinted above; but the Italian ſort being the ſtrongeſt ſhooter is the beſt for this purpoſe.

As to the general culture of all the ſorts, they require very little; the upright ſorts in particular, require to have only their ſtraggling ſhoots ſhortened, and dead wood cut out; and the trailing kinds, which are trained as climbers, muſt have their branches conducted in a proper manner upon their reſpective ſupports; and every year all rambling ſhoots muſt be reduced and trained as you ſhall ſee proper, ſo as to preſerve them within due limits, except you deſign they ſhall run wild in their own rural way, eſpecially thoſe intended to climb among the branches of trees, ſhrubs, and buſhes; thoſe alſo intended to cover arbours and ſeats, ſhould be pruned and trained annually, laying the ſhoots along at their length, eſpecially till they have covered the allotted ſpace; ſhortening or clearing out, however, all ſuch ſtragglers which cannot be properly trained; likewiſe ſuch of thoſe ſorts as are trained againſt walls, &c. muſt have an annual pruning and training, by going over them two or three times in ſummer, laying in ſome of the moſt convenient proper ſhoots, ſome at their length, ſhortening or retrenching others as it ſhall ſeem neceſſary to preſerve regularity, and the proper ſucceſſion of flowers; obſerving, however, to train enough, at this time, of ſuch particularly as ſhall appear neceſſary to continue the bloom as long as poſſible; and in winter-pruning, thin out all thoſe left in ſummer, which may now appear ſuperfluous or unneceſſary, and ſhorten all ſuch as are too long for the ſpace allotted for them, eſpecially all thoſe with weak ſtraggling tops; and nail in the remaining proper branches and ſhoots cloſe to the wall.

*Propagation of all the Sorts.*

The propagation of all the ſorts is effected by layers and cuttings, more particularly the latter; both of which readily emits roots and form plants in one year, fit to tranſplant; ſome ſorts are alſo propagated by ſuckers, and by ſeed.

By Layers.——In autumn, winter, or ſpring, lay a quantity of the lower young ſhoots of the former ſummer, by ſimple laying, ſhortening their ſtraggling tops, they will be well rooted by autumn following, each commencing a good plant, and ſhould be taken off and planted in nurſery rows for a year or two, to acquire proper ſize and ſtrength for uſe.

By Cuttings.——Any time from October till March is the proper time for this work, but the ſooner the better; and by which method prodigious quantities of the plants may be raiſed, as almoſt every cutting will readily grow. Chuſe the young ſhoots of the former ſummer, the ſtrongeſt and moſt robuſt, and which divide into cuttings from about ſix or eight to ten or fifteen inches long, plant them in rows in any ſhady border of common earth, a foot aſunder, and half that diſtance in each row, or cloſer if great quantities are required, putting each cutting two parts out of three, or more, into the ground, they will take root freely

freely without any trouble, and ſhoot at top, ſo as to form proper plants by autumn or winter following, at which time they may be tranſplanted into the nurſery quarters, to have more room to grow, placing them in rows two feet diſtance, and a foot apart in the rows; where let them remain a year or two, or till wanted for the ſhrubbery.

By Suckers.—The *Lonicera Diervilla* ſends up annually abundance of ſpawn, or ſmall ſuckers from the root, by which it may alſo be propagated, each of which taken up in autumn or winter, and planted in the nurſery will form a proper plant; obſerving this ſort is likewiſe propagated with great eaſe by layers and cuttings as above.

By ſeed —Several of the upright ſorts, and others, furniſh plenty of ſeeds, which if ſowed in autumn, in a bed of common mould, an inch deep, many of the plants will probably riſe in ſpring, but a great part of them are apt to remain till the ſecond ſpring before they appear.

LOTUS, Bird's-foot Trefoil.

It conſiſts of herbaceous and underſhrubby plants for the pleaſure-garden and green-houſe, ſome trailers, and ſome of erect growth, from one to two or three feet high, adorned moſtly with trifoliate leaves, and papilionaceous ornamental flowers.

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX, is monophyllous, five-parted at top, and permanent. COROLLA, is papilionaceous, the ſtandard roundiſh and reflexed backward, the wings ſhorter, broad and roundiſh, and the keel ſhort and cloſed above. STAMINA, ten diadelphous filaments, and ſmall antheræ. PISTILLUM, an oblong taper germen, a ſimple ſtyle, and inflexed ſtigma. PERICARPIUM, a cloſe, cylindrical, bivalvular, unilocular pod, having numerous partitions ſeparating the ſeeds.

The name Bird's-foot Trefoil given to the plants of this genus, is derived from the fancied reſemblance of the bended ſeed-pods of ſome of the ſorts, to the toes of birds feet.

There are many ſpecies, but thoſe common to our gardens are, a hardy herbaceous annual for the pleaſure-garden, and four underſhrubby perennials for the green-houſe.

*Hardy Annual Kind.*

[1]LOTUS *Tetragonolobus.*

*Tetragonous Winged-podded Lotus, commonly called Winged Pea.*] Hath trailing, ſlender, branchy ſtalks, a ſoot long; garniſhed with trifoliate oval leaves, accompanied by two oval bractea at their baſe; and from the axillas of the branches large papilionaceous red flowers, one on each foot-ſtalk; ſucceeded by tetragonous ſolitary pods, having a membranous wing, or lobe, running longitudinally at each corner.

It flowers ornamentally in June and July, and the ſeeds ripen in autumn.

This plant is of the tribe of hardy annuals, and has been long cultivated as a flowery plant to adorn the flower-borders, &c. is generally ſowed in patches where the plants are to remain.

*Tender Green-houſe Kinds.*

Theſe kinds are perennial in root, and moſtly with durable ſtalks; are natives of diſtant warm countries, and require protection here from froſt, ſo muſt be kept in pots, and placed among the green-houſe plants.

The ſorts are;

[2]LOTUS *Creticus.*

*Cretan Silvery Lotus.*] Hath a ſlender underſhrubby ſtalk, riſing by ſupport three or four feet high; ornamented with trifoliate bright-ſilvery leaves; and from the ſides of the branches long foot-ſtalks, each terminated by ſeveral yellow flowers, ſucceeded by ſubternate pods.

[3]LOTUS *Jacobæus.*

*Jacobæus Lotus of St. James's Iſland.*] Hath upright herbaceous ſtalks, branching two or three feet high; adorned with narrow, ſpear-ſhaped, cloſe-ſitting, whitiſh leaves, ſometimes are trifoliate, and quinquefoliate; and from the upper part of the branches long ſlender foot-ſtalks, terminated each by three or five yellowiſh purple flowers, ſucceeded by ſubternate pods.

It flowers moſt part of ſummer and autumn, ſucceeded by plenty of ſeeds.

[4]LOTUS *Hirſutus.*

*Hairy Italian Lotus.*] Hath upright hairy ſtalks, branching a yard high; garniſhed with trifoliate hoary leaves; and from the ſides of the branches longiſh ſoot ſtalks, terminated by heads of whitiſh hoary-cupped flowers; ſucceeded by oval pods; flowers in June, and the ſeeds ripen in autumn.

[5]LOTUS *Dorycnium.*

*Dorycnium, or White Auſtrian Lotus.*] Hath underſhrubby ſmooth ſtalks, branching three or four feet high; five-lobed, hand-ſhaped, hoary leaves; and the branches terminated

minated by aphyllous heads of ſmall white flowers; ſucceeded by ſhort pods; flowers in June.

The flowers of all theſe ſpecies of Lotus are of the papilionaceous, or butterfly-ſhaped kind, compoſed each of four petals, i. e. a vixillum, two wings, and a carina. See the *Characters*.

The firſt ſpecies being a hardy annual of the flowery kind, is proper for ornamenting the compartments of the pleaſure-garden. It is raiſed from ſeed annually in ſpring, in the open ground, in the places where the plants are to remain to flower. Sow it any time in ſpring, from February till May, in patches in different parts of the garden, five or ſix ſeeds in each patch, half an inch deep; the plants will ſoon come up, which remaining in the ſame place for flowering, require only occaſional weeding, and may either be ſuffered to trail, according to their natural growth, or may tie them up to ſticks; they will flower equally well in either method, exhibiting their crimſon flowers very ornamentally.

This plant was formerly cultivated as an eſculent, for its young green ſeed-pods to dreſs and eat like peas, alſo in the manner of kidney-beans.

The green houſe kinds effect an agreeable variety in that collection, both in their foliage and flowers. They all require ſhelter from froſt, the two firſt of them in particular; but the two laſt are ſomewhat hardier, and will ſometimes ſucceed in the full ground all the year in a warm and dry ſituation, ſo may place ſome to take their chance; it, however, is proper to keep ſome of all the ſorts in pots of rich earth, in order for moving to ſhelter in winter.

The propagation of theſe green-houſe ſorts is by ſeed, and by cuttings.

By Seed.—Sow it in April in a warm border; or, to bring them more forward, in a moderate hot-bed; and when the plants are about three inches high, plant them in ſeparate ſmall pots of light rich earth, give water, and place them in the ſhade till freſh-rooted.

By Cuttings.——Cuttings of the young ſtalks and branches, planted any time from April till July, in beds or pots of rich mould, giving ſhade and water, they will emit roots, and form plants in a few weeks, but may be greatly facilitated by covering them cloſe with hand-glaſſes till they begin to ſhoot at top, then inure them gradually to the air, and ſoon after may be tranſplanted into ſeparate pots.

LUNARIA, Moonwort, Sattin-flower, or Honeſty.

The plants are tall, herbaceous, ornamental annuals and perennials, of upright branchy growth, for the pleaſure-garden, riſing two or three feet high, garniſhed with heart-ſhaped, and oval-lanceolate leaves, and cluſters and ſpikes of tetrapetalous cruciforme flowers; ſucceeded by broad, roundiſh, moon-ſhaped, flat, very thin pods, of a ſattin colour, ſo tranſparent as to diſcover the ſeed through them; hence it is commonly called Honeſty.

Claſs and order, *Tetradynamia Siliculoſa*.

*Characters.*] CALIX, four oblong-oval deciduous leaves. COROLLA, four large, obtuſe, cruciforme petals. STAMINA, four long and two ſhorter filaments, and erect, patent antheræ. PISTILLUM, a pedicellated oval oblong germen, very ſhort ſtyle, and an obtuſe entire ſtigma. PERICARPIUM, a large elliptical plane, compreſſed, very thin, bilocular pod, erected on a ſmall foot-ſtalk, containing kidney-ſhaped, compreſſed, bordered ſeeds.

There are but two ſpecies, an annual and perennial, the former of which has been long a reſident of our gardens, commonly known by the name of Honeſty.

The ſpecies are:

1 LUNARIA *Annua*.

*Annual Lunaria, commonly called Sattin-flower, or Honeſty.*] Hath fibrey roots, crowned by large heart ſhaped leaves; amidſt them an upright reddiſh flower-ſtalk, branching all around, a yard high, adorned with heart-ſhaped leaves, oppoſite below and ſitting cloſe above; and from the ſides and ends of all the branches cluſters of cruciforme purple flowers, ſucceeded by numerous, broad, moon-ſhaped, white, ſattiny, pellucid pods.

*Variety.*] Large podded ſattin-flower, or honeſty.

Both the varieties flower in May or June, and their pods and ſeed ripen in autumn; the ſeed-pods being numerous, white ſattin-like, and tranſparent, exhibit a ſingularly agreeable appearance; and as they remain long on the branches, the ſtalks are often cut off in September, and dried, then tied in ſpreading bunches, to place in large rooms all winter, where they will appear very ornamental, more eſpecially if the pods are diveſted of their

their outer huſks, they will be whiter, more fattiny and ſhining.

²LUNARIA *Rediviva.*

*Redivive Sweet-ſcented Moon-wort.*] Hath fibrated perennial roots; upright, firm, tough ſtalks, branching two feet high; garniſhed with oval-ſpear-ſhaped, rough leaves, placed alternate above; and the branches terminated by ſpikes of ſweet-ſcented flowers, of different colours in the varieties; ſucceeded by oblong flat pods.

*Varieties.*] With purple flowers—with white flowers—and with yellow flowers; all flowering in June, ſucceeded by pods and ripe ſeeds in autumn, having the ſame property as the former.

The flowers of both the ſpecies, and reſpective varieties are cruciforme, and conſiſt each of four heart-ſhaped petals, are numerous on each plant and conſpicuous.

Both the ſpecies and their varieties are very hardy, and will grow any where; the firſt ſort decays annually after having flowered and ſeeded; but the perennial is of ſeveral years duration in root, eſpecially if cultivated in a dry ſandy, or rubbiſhy ſoil.

The firſt ſpecies, *Lunaria Annua*, however, may be conſidered both as an annual and biennial; for, as an annual, being ſowed early in ſpring, it will come up the ſame ſeaſon, and often run up to flower, perfect ſeeds, and wholly periſh in autumn; and as a biennial, if ſowed in ſummer, or early in autumn, it will riſe the ſame year, ſtand the winter, flower early in ſummer, perfect ſeeds in autumn, and then totally periſh; for conſidered either as annual or biennial, it always decays root and branch ſoon after the ſeeds are ripe; remarking that the autumn-ſowed plants always grow ſtrongeſt, and from ſcattered or ſelf-ſown ſeeds, numbers of young plants will riſe ſpontaneouſly.

But as to the ſecond ſort, it being once raiſed, it remains perennial in root, ſending up freſh ſtalks annually in ſpring for flowering, which always decay as ſoon as they have perfected ſeeds.

The propagation of both the ſpecies, &c. is by ſeed, in the natural ground in autumn or ſpring, either in patches to remain, or in beds for tranſplantation. By the former method the plants are generally ſtronger than thoſe which are tranſplanted; but they ſucceed very well both ways; obſerving, when deſigned to ſow them in patches, to put ſeveral ſeeds in each, half an inch deep, and when the plants come up, leave only one of the beſt in each patch; and if intended to ſow any for tranſplantation, ſow them evenly on any bed or border, and rake them in; and when the plants are two or three inches high plant them out, the annual ſorts where they are finally to remain to flower; and the perennials either where they are to remain, or in nurſery beds till autumn, then to be planted out for good.

LUPINUS, Lupine.

This genus conſiſts of hardy, herbaceous, flowery annuals, and a perennial, all for the pleaſure-garden, riſing with upright ſtalks, from about a foot to three or four high; ornamented with digitate, or fingered leaves, and terminated by long whorled ſpikes of papilionaceous flowers.

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX, is monophyllous and bifid. COROLLA, is papilionaceous, the vexillum roundiſh-cordated, emarginated, with the ſides reflexed and compreſſed, the wings nearly oval, and join at their baſe, and a narrow, falcated, acuminated carina. STAMINA, ten diadelphous filaments, and roundiſh-oblong antheræ. PISTILLUM, an awl-ſhaped compreſſed germen, ſubulated ſtyle, and obtuſe ſtigma. PERICARPIUM, a large oblong, compreſſed, acuminated, coriaceous, unilocular pod, containing ſeveral roundiſh compreſſed ſeeds.

There are about ſeven ſpecies, ſix annuals and one perennial, all hardy, and moſtly plants of ornament, both in their finely digitate leaves, and variety of their flowers.

*Annual Kinds.*

Of theſe kinds there are about four or five ſpecies common to our gardens; have all fibrated roots, each plant riſing with one upright branchy ſtalk, as in their deſcription.

LUPINUS *Lutea.*

*Yellow Lupine.*] Riſes with an upright ſtalk, branching a foot or eighteen inches high; garniſhed with digitate leaves, of eight or nine long narrow lobes; and the ſtalks and branches terminated by looſe whorled ſpikes of yellow flowers, having verticillate cups with appendages, the upper lip bipartite, and the under one tridented; flowers in June and July.

The flowers of this have a ſweet fragrance, for which peculiar merit it is in great eſtimation.

[2]LUPINUS *Hirſutus.*

*Hairy Giant Lupine.*] Riſes with an upright, thick, downy, hairy ſtalk, branching ſtrongly three or four feet high; garniſhed with digitate hairy leaves, of from nine to eleven, oblong, wedge-ſhaped, ſilvery-white lobes; and the ſtalk and branches terminated by long whorled ſpikes of large flowers, of different colours in the varieties, having alternate cups with appendages, the upper-lip bipartite, the under one tridented.

*Varieties.*] With blue flowers——with fleſh-coloured flowers, commonly called Roſe Lupine. The flowers of both varieties are large and ſhowey, appear in July, and are ſucceeded by large, broad, hoary ſeed-pods.

[3]LUPINUS *Anguſtifolia.*

*Narrow-leaved Tall Blue Lupine.*] Riſes with an upright firm ſtalk, branching a yard high; digitate large leaves, of nine or ten oblong, obtuſe, blueiſh lobes; and the ſtalks and branches terminated by whorled ſpikes of blue flowers, having alternate cups with appendages, the upper-lip bipartite, and the under entire; flowers in July.

[4]LUPINUS *Varius.*

*Variegated-ſeeded Blue Lupine.*] Riſes with an upright firm ſtalk, two feet and a half high; digitate leaves, of ſix or ſeven oblong hairy lobes, and the ſtalk and branches terminated by ſpikes of blue flowers, having ſemi-verticillate cups with appendages, the the upper-lip bifid, and the under almoſt tridented; and with variegated ſeed.

[5]LUPINUS *Alba.*

*White Lupine.*] Riſes with an upright thick ſtalk, branching two feet high; digitate leaves of ſeven or eight narrow hairy lobes, covered with a ſilvery down; and the branches ending in looſe ſpikes of white flowers, having alternate cups without appendages, the upper lip entire, and the under tridented.

All theſe annual Lupines riſe from ſeed ſowed annually in ſpring and ſummer in the open ground, arrive to full growth in June and July, when they flower, and ripen ſeed abundantly in autumn, then the plants totally periſh root and branch.

They are all very ornamental in the pleaſure-garden, but the yellow ſort claim precedence for the ſweetneſs of its flower.

*Perennial Kind.*

There is but one ſort, it is perennial in root, and annual in ſtalk.

[6]LUPINUS *Perennis.*

*Perennial Blue Virginia Lupine.*] Hath long fibrated, creeping, deeply-penetrating roots; upright channelled ſtalks, branching near two feet high; digitate leaves of eight or ten ſpear-ſhaped narrow lobes; and the branches terminated by looſe ſpikes of blue flowers, having alternate cups, without appendages, the upper-lip emarginated, and the under one entire; flowers in June.

All the ſpecies flower in June and July, and ripen plenty of ſeeds in autumn.

The flowers of all the ſorts are papilionaceous, conſiſting of four petals, that is, a ſtandard, two wings, and carina (ſee the *Characters*), and grow in erect ſpikes, often diſpoſed in whorls one above another; which in all the ſorts, are ſucceeded by oblong compreſſed, legumenous pods, containing from three to five or ſix roundiſh flat ſeeds.

The leaves of all theſe plants are beautifully digitated into many lobes, ſtand moſtly upon long foot-ſtalks, and exhibit an agreeable variety.

The plants of all the ſorts ſucceed in any of the open borders, &c. and effect a fine variety, as well as very ornamental appearance; and are all eaſily raiſed from ſeed, which ſhould generally be diſpoſed in ſmall patches in the different flower compartments, in the places where it is deſigned the plants ſhall flower; placing ſome more forward, and others backward, according to their order of growth; obſerving the annuals muſt be raiſed annually, as they always periſh ſoon after they have flowered and ripened ſeeds; but the perennial ſort, once raiſed is of ſeveral years duration.

*Propagation, &c. of all the Sorts.*

The propagation of all the ſorts is effected with the utmoſt facility by ſeed in the full ground in March, April, and May; obſerving, that as too copious moiſture is apt to rot the ſeed, they ſhould not be ſowed earlier than the middle or latter end of March, except on very dry warm ſoils.

The annual ſorts ſhould always be ſowed at once in the places where it is intended the plants are to flower, for they do not ſucceed by tranſplantation; and to have a long ſucceſſion of bloom, about three or four different ſowings may be neceſſary, from about the middle or latter end of March until June, eſpecially the yellow ſort, whoſe bloom is rather of ſhort duration; obſerving to ſow all

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the ſorts in patches, four, five, or ſix ſeeds in each, near an inch deep; and when the plants come up, leave only three of the beſt of them, though of the large kind one or two may be ſufficient in each place. When large quantities are required for noſegays, to ſupply the markets, &c. as practiſed about London with the yellow ſweet-ſcented ſort, they may be ſowed in rows in beds, drilling them in an inch deep, allowing a foot between the rows. In either mode of ſowing all the ſorts, let the plants remain in the ſame place for flowering, as above mentioned, and keep them clean from weeds, which is all the culture they require; and by repeated ſowings at a month's interval, the bloom may be continued from June or July until September or October; and the firſt ſown plants will furniſh plenty of ripe ſeed.

If ſome ſeeds are ſowed in autumn, in September, in a warm dry ſituation, the plants will come up, and often ſtand the winter tolerably well, and flower early the following year; or, if ſome are ſowed in pots, eſpecially the giant ſort, compriſing the large blue, and the roſe Lupine, which in wet autumns ripen ſeed but indifferently; ſo that by placing the pots in a garden frame, to have occaſional protection from hard froſt, they will flower early in the following ſummer, ſo as to perfect ſeeds before they are attacked by the autumnal rains.

The perennial ſort may be ſowed either in patches in the different compartments, as already obſerved, for the plants to remain where ſowed; or may be ſowed in beds in drills, for tranſplantation; but as the plants generally ſend their roots deep into the ground, they generally ſucceed beſt when permitted to remain where raiſed, than by removal; however, both methods may be practiſed occaſionally, and the plants once raiſed remain durable in root many years, ſending up new ſtalks annually in ſpring.

LYCHNIS, *Lychnis*, or Campion, including alſo the Bachelors-button, Catch-fly, &c.

It conſiſts of hardy, herbaceous, very floriferous ornamental perennials, of upright growth for the pleaſure-garden, riſing with erect firm ſtalks, two or three feet high, adorned at each joint with long ſpear-pointed leaves; and all the ſtalks terminated by cluſters and ſpikes of quinquepetalous, very conſpicuous flowers, of different colours in different ſpecies.

Claſs and order, *Decandria Pentagynia.*

*Characters.*] CALIX, is monophyllous, tubulous, five-parted at top, and permanent. COROLLA, five petals, having long tails, or ungues, the upper part, or limb, broad plane, and in ſome cut into ſegments. STAMINA, ten long filaments, alternately arranged, and attached to the ungues of the petals, and incumbent antheræ. PISTILLUM, a ſuboval germen, five long ſtyles, and reflexed downy ſtigma. PERICARPIUM, an oval, *unilocular*, quinquevalvular, covered capſule, having numerous roundiſh ſeeds.

There are about ſeven ſpecies, but not more than four that have merit as garden-plants, viz. the ſcarlet Lychnis—Bachelors-button—Catch fly——Ragged Robbin: each compriſing ſome varieties.

The ſpecies are;

[1]LYCHNIS *Chalcedonica.*

*Chalcedonian Scarlet Lychnis.*] Hath a fibrated perennial root; upright, ſtraight, hairy, annual ſtalks, riſing three or four feet high; garniſhed with long, ſpear-pointed, cloſe-ſitting leaves, by pairs oppoſite; and the ſtalk crowned by a large, compact, flat bunch of beautiful ſcarlet, or flame-coloured flowers; appearing in June and July.

*Varieties.*] With ſingle ſcarlet flowers—with large, double, ſcarlet flowers, of exceeding beauty and elegance——with pale-red flowers—with white flowers.

Of theſe varieties of this ſpecies, the double ſcarlet Lychnis is ſuperior to all for ſize and elegance, the flowers being large, very double, and collected into a very large bunch, and exhibit a charming appearance; the ſingle ſcarlet kind is alſo very pretty; and the others effect an agreeable variety with the ſcarlet kinds. All the ſingles furniſh plenty of ſeed, by which they may be raiſed abundantly; but the double, by its multiplicity of petals, exclude the generative organs, rarely ever produce ſeed, ſo can only be propagated by ſlipping the roots, and by cuttings of its flower-ſtalks. See the *Propagation.*

[2]LYCHNIS *Dioecia.*

*Dioecious Lychnis, commonly called Bachelors-button.*] Hath fibrated perennial roots; upright ſtalks, branching very diffuſe and irregular, two or three feet high; having oval, acute-pointed, rough leaves, by pairs oppoſite; and all the branches terminated by cluſters of dioeceous flowers of different colours and properties in the varieties; flowering in April and May.

*Varieties.*] Common ſingle red-flowered Bachelors-button——double red——double white—and ſingle white-flowered.

The double varieties are exceedingly ornamental in their bloom; the flowers large, very double, and continue long in blow; the ſingle red ſort grows wild by ditch ſides, and other moiſt places in many parts of England; from which the doubles were accidentally obtained by culture in gardens, and are propagated only by ſlipping the roots; and the ſingles, both by roots and by ſeed.

The flowers are often dioecious, i. e. male and female on diſtinct plants.

[3]LYCHNIS *Viſcaria.*

*Viſcous, German Lychnis, commonly callea Catch-fly.*] Hath fibrey perennial roots; crowned by a tuft of long, graſſy leaves cloſe to the ground; many erect, ſtraight, ſingle ſtalks, riſing a foot and a half or two feet high, exſuding from their upper part a viſcous or clammy matter; garniſhed with long narrow leaves, by pairs oppoſite; and terminated by many reddiſh-purple flowers, in cluſters one above another, forming a ſort of long looſe ſpike; all the flowers with entire petals; flowering in May.

*Varieties.*] With ſingle red flowers—with double red flowers—with white flowers.

The double variety is conſiderably the moſt eligible for general culture, and is propagated in plenty by parting the roots.

All the varieties of this ſpecies emitting a glutinous liquid matter from their ſtalks, and flies happening to light thereon, ſometimes ſtick and entangle themſelves, the plant thereby obtained the name Catch-fly.

[4]LYCHNIS *Flos-cuculi.*

*Cuckoo-flower Lychnis, commonly called Ragged Robin.*] Hath fibrey perennial roots; upright, branchleſs, channelled ſtalks, riſing near two feet high; garniſhed with long, narrow, ſpear-ſhaped leaves, in pairs oppoſite; and terminated by branchy foot-ſtalks, ſuſtaining many purple, deeply quadrifid flowers; appearing in May.

The flowers having each petal deeply quadrifid in a torn or ragged-like manner, the plant obtained the cant name of Ragged Robin.

*Varieties.*] With ſingle flowers—double flowers. The double ſort is a large, very multiple, fair flower, is an improved variety of the ſingle, which grows wild in moſt of our moiſt meadows, and is rarely cultivated; but the double, being very ornamental, merits culture in every garden; it, like the other double Lychniſes, rarely produces ſeed, but is eaſily propagated by ſlipping the roots.

All the four ſpecies and reſpective varieties are very hardy; all fibrous-rooted, the roots perennial; but are annual in ſtalk, which riſes in ſpring, flower in ſummer, ſucceeded in the ſingles by plenty of ſeed in autumn; by which all the ſingle varieties may be raiſed in abundance, but the doubles only by dividing the roots, and ſome by cuttings of the flower-ſtalks.

The flowers of all the ſorts, conſidered ſeparately, are ſmalliſh, but their numbers on each plant renders them conſpicuous; each flower in its ſingle ſtate, is compoſed of five plane petals, (ſee the *Characters*); but in the doubles, the petals are numerous; the ſingles ſucceeded by plenty of ſeed, but the doubles rarely any.

All theſe plants are very ornamental furniture for the pleaſure-garden, particularly the doubles, and will proſper in any common ſoil, will remain in all weathers unhurt, and each individual be of many years duration in root, which when of ſome ſtanding, ſend up many ſtalks every ſpring, and which being all terminated by numerous flowers, make a fine appearance in ſummer; but the ſcarlet Lychnis claims preference, eſpecially the double kind, which is ſingularly beautiful, even the ſingle ſcarlet ſort is alſo very ſhowy and pretty, and by ſome preferred to the double; all the other ſpecies, however, in their reſpective double-flowered ſtates, are pretty ornaments for the principal compartments of the pleaſure-ground.

All the ſorts are kept in the nurſeries for ſale; and having a few plants of each, may ſoon encreaſe the ſtock.

They may be planted any time from October till March in open weather, though if in autumn the better; obſerving to place the talleſt growers the moſt backward, the others more toward the front, according to their ſeveral degrees of height.

All the culture they require, is the clearing them from weeds in ſummer, in common with the other plants of the ſame compartments; ſupporting with ſtakes the ſtalks of thoſe which ſhall need it, and cutting down the decayed ſtalks in autumn.

*Propagation of all the Sorts.*

The propagation of all the ſorts is exceeding eaſy; all the ſingles by ſeed, and parting the

the roots; and the doubles by dividing or ſlipping the roots only, ſometimes alſo by cuttings of their ſtalks; all performed in the full ground.

By Seed.——The ſingles may be raiſed in great plenty this way, though but few of them except the ſingle ſcarlet Lychnis, are worth raiſing, ſince the doubles may be ſo eaſily encreaſed by ſlipping the roots, &c. March or April is the proper time for ſowing, chuſing a bed or border of light earth, which being dug, ſow the ſeeds on the ſurface, each ſort ſeparate, and rake them in; the plants will come up in two or three weeks, give occaſional waterings and hand-weeding; and in June, when the plants are two or three inches high, plant them out in beds or borders, in rows ſix inches aſunder; water them till freſh rooted, and let them remain till October, then tranſplant them where they are to remain, and they will all flower the following ſummer.

By Slipping the Roots.—All the ſorts, both ſingle and double, may be propagated by this method, but is more particularly applicable to the doubles, becauſe they cannot with certainty be obtained from ſeed; the beſt ſeaſon for performing this work is autumn, after the ſtalks decay; it, however, may alſo be done in the ſpring: the ſcarlet Lychnis affords offſets the moſt ſparing of any; all the others afford plenty; as to the method of ſlipping them, the whole root may either be taken up and divided into as many ſlips as are furniſhed with proper root-fibres, or the main root may ſtand, and ſlip off as many of the outer off-ſets as ſhall ſeem convenient; if the ſlips taken off in either method are tolerably ſtrong, the beſt of them may be planted at once where they are to remain; but if rather ſmall and weak, it is the moſt eligible to plant them in nurſery-rows, half a foot aſunder, to remain a year, then tranſplant for good.

By Cuttings of the Stalks.—This is more particularly neceſſary for the double ſcarlet Lychnis, when it encreaſes but ſparingly by off-ſets of the root. The work is performed in ſummer, when the ſtalks are well advanced in growth, but before they flower, or have become hard and woody: cut ſome of them off cloſe to the bottom, and divide them into lengths of from three to five joints, and plant them in an eaſterly border of rich earth, putting them two parts of three, or more, into the ground, leaving only one joint out; give water directly, and repeat it, together with occaſional ſhade in hot weather, and they will be well rooted, and form proper plants fit to tranſplant in autumn.

If the above cuttings, as ſoon as planted, are covered down cloſe with hand-glaſſes, it will greatly promote their rooting, ſo as to form ſtronger plants before winter.

LYCIUM, Box-thorn.

This genus retains three ſhrubby exotics of Africa, &c. for the green-houſe and ſhrubbery, riſing from about ſix or eight to ten feet high, armed with ſpines, and adorned with ſmall entire leaves, and monopetalous infundibuliforme flowers.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX, is ſmall, obtuſe, erect, five-parted, and permanent. COROLLA, one funnel ſhaped petal, having a cylindric incurved tube, divided above into five ſmall ſegments. STAMINA, five ſhort ſubulated filaments, and erect antheræ. PISTILLUM, a roundiſh germen, ſimple ſtyle longer than the ſtamina, and thick bifid ſtigma. PERICARPIUM, a roundiſh bilocular berry, and numerous reneiforme ſeeds.

The ſpecies known in our gardens are;

LYCIUM *Afrum.*

*African Narrow-leaved Box-thorn.*] Hath ſhrubby irregular ſtalks, branching nine or ten feet high, the branches whitiſh, crooked, knotty, and armed with long ſharp ſpines; numerous ſmall linear leaves in cluſters, of different ſizes in each cluſter, the ſmaller ſtanding at the baſe of the larger; and purple flowers on ſhort foot-ſtalks from the ſides of the branches.

²LYCIUM *Barbarum.*

*Barbary Roſemarinus-leaved Lycium.*] Hath ſhrubby ſtalks, branching irregularly ſix or ſeven feet high, the branches whitiſh, and armed with thorns; ſmall ſpear-ſhaped, oval, thick, whitiſh leaves, placed irregularly; and ſmall white flowers from the ſides of the branches, having bifid cups; flowers in June.

Of this ſpecies are the two following varieties, both ſhrubby trailers, of hardy temperature; they were formerly conſidered as diſtinct ſpecies, but obſervation has determined them to be varieties only of the above ſpecies, *Lycium Barbarum:*

*Trailing Broad-leaved Barbary Lycium.*] Hath ſhrubby, declinated, very diffuſed ſtalks and branches of trailing growth, advancing irregularly many feet in length, ſpread about every way, and armed with very long thorns;

large

large, oval, ſpear-ſhaped, thick, whitiſh-green leaves, growing on all ſides by threes; and purpliſh flowers, ſingly on ſhort foot-ſtalks from the ſides of the branches, having bifid cups; flowering from Auguſt till October.

*Trailing Narrow-leaved Barbary Lycium.*] Hath ſhrubby, very branchy ſtalks, of trailing growth, ſpreading irregularly every way, armed with ſhort thorns; long, lanceolate, narrow, alternate, whitiſh-green leaves; and ſmall flowers, having bifid cups; flowering in June and July.

The flowers of all the ſorts conſiſts of one funnel-ſhaped petal, with an incurved tube, divided above into five parts; ſee the *Characters*.

All the four ſorts are durable in root, ſtem, and branches, and both the ſpecies are evergreen, retaining their leaves all the year; and they all flower here annually in ſummer.

The two ſpecies being ſomewhat tender require protection from froſt, ſo muſt be kept principally in pots, and placed among the green-houſe plants, where, as being cloſely garniſhed with numerous ſmall foliage, they will effect an eligible variety in that collection; ſome of them may alſo be placed in a warm part of the ſhrubbery to take their chance, and will ſucceed tolerably, except in very ſevere winters.

But the two varieties of the *Lycium Barbarum* are hardy, ſucceed in the open ground the year round, and are proper for the ſhrubbery, to introduce as trailers or climbers, for their branches trail and ramble about every way, ſo ſhould have ſupport of ſtakes, &c. to train them upon.

They all ſucceed in any common earth of a garden; let the green houſe ſorts, however, be potted in light, rich, loamy mould, if poſſible.

*Propagation.*

The propagation of all the ſorts is by ſeed, layers, and cuttings; but as they all grow freely by the two latter methods, raiſing from ſeed is almoſt unneceſſary, eſpecially to the two hardy varieties.

By Seed.—This is ſometimes practiſed for the green-houſe kinds; ſow the ſeed in autumn in pots, an inch deep, which in winter place in a frame, &c. to have ſhelter from froſt, but to enjoy the full air in open weather; and in ſpring plunge them in a moderate hot-bed, it will ſoon bring up the plants; when they are about three inches high, plant them in ſeparate pots, give water, and place them in the ſhade till freſh-rooted, and repeat the waterings as there ſhall be occaſion.

By Layers.—In ſpring lay a quantity of the young branches, by ſimple or common laying, they will readily emit roots, and be proper for tranſplanting in autumn.

By Cuttings.—In March or April plant cuttings of the young ſhoots of the green-houſe kinds in pots, and plunge them in a ſhady border, give water in hot weather, and they will readily grow; or if any time from April till the end of June, young cuttings are planted in a ſhady border, they will emit roots, and form plants fit to be potted in autumn; but cuttings of the two hardy varieties planted at almoſt any time of the year will readily grow, though from October till March is the beſt time, and they will form good plants by autumn following.

LYSIMACHIA, Looſe ſtrife.

The plants are hardy herbaceous perennials and biennials, &c. of upright growth, moſtly for the pleaſure-garden, riſing with erect ſtalks, from about half a yard to two or three feet high; garniſhed with narrow, entire leaves; and terminated by ſpikes and cluſters of monopetalous, rotated, five-parted, ſpreading flowers.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX, is erect, acutely five-parted, and permanent. COROLLA, is monopetalous, rotaceous, and deeply divided into five flat, open-ſpreading ſegments. STAMINA, five ſubulate filaments, and acuminated antheræ. PISTILLUM, a round germen, filiforme ſtyle, and obtuſe ſtigma. PERICARPIUM, a globular, decemvalvular, unilocular capſule, having many angular ſeeds.

There are many ſpecies, but not more than three or four commonly retained in gardens, and thoſe moſtly perennials; all the ſorts having fibrated roots, ſending up ſtalks annually.

The ſpecies are;

1 LYSIMACHIA *Vulgaris.*

*Common Great Yellow Looſe-ſtrife.*] Hath a thick, creeping, widely-ſpreading, reddiſh root; upright firm ſtalks, three or four feet high; garniſhed with ſpear-ſhaped, pointed, ſeſſile leaves, by threes or fours; and each ſtalk dividing at top into ſeveral foot-ſtalks, each

each of thoſe terminated by a racemous cluſter of elegant yellow flowers; in June and July.

This inhabits ditch-ſides and moiſt places in many parts of England; but being a tall, fine ſhewy plant in bloom, it is admitted into large gardens for the variety of its flowers.

[2]LYSIMACHIA *Ciliata.*

*Ciliated Canadian Yellow Looſe-ſtrife.*] Hath a creeping, faſt-ſpreading root; many upright ſtalks, riſing two feet high; oval-lanceolate, ſmooth, oppoſite leaves, having ciliated foot-ſtalks; and from the upper axillas, long ſlender foot-ſtalks, each ſuſtaining one yellow flower; in June and July.

[3]LYSIMACHIA *Nummularia.*

*Nummularia, commonly called Yellow Money-wort, or Herb Two-pence.*] Hath a ſmall, creeping, ſpreading root; numerous, weak, trailing, rooting ſtalks; ſmall, nearly heart-ſhaped, ſmooth, oppoſite leaves; and from the axillas, long ſlender foot-ſtalks, each having a ſolitary yellow flower; in June and July.

It grows naturally in moiſt ſhady places in England, but is cultivated in many gardens for variety.

[4]LYSIMACHIA *Salicifolia, or Willow-leaved white Spaniſh Looſe-ſtrife*, is now removed to another genus; it grows three feet high, hav ſpear-ſhaped, narrow leaves, and the ſtalks terminated by long looſe ſpikes of fine white flowers; in June.

The flowers of all theſe plants are each of one rotaceous, or wheel-ſhaped, deeply-five-parted petal, are pretty numerous on each plant, tolerably conſpicuous, and are ſucceeded by ripe ſeeds in autumn, except the ciliated kind, which rarely produce ſeeds in England.

All the plants are perennial in root, and annual in ſtalk, and all of them multiply exceedingly by their creeping roots.

They are all very hardy, proſper in any common ſoil and ſituation in a garden, but delight moſt in ſomewhat ſhady moiſt places; they, however, may be planted any where to form a variety, and their roots will abide for years, and encreaſe greatly ſo as to ſend up many ſtalks, and exhibit a very ſhowy bloom.

All the ſorts here ſpecified are kept in moſt of the nurſery gardens for ſale.

They may be planted any time from October till March, and their culture is only the keeping them clear from weeds, and cutting down their decayed ſtalks in autumn, like other herbaceous perennials; and when the roots have ſpread too much, trim them in all around within due bounds.

*Propagation.*

The propagation of all the ſorts is effected abundantly by parting their roots any time, from the decay of the ſtalks in autumn until new ones begin to riſe in ſpring.

They may alſo be propagated by ſeed; ſowing them in autumn upon an eaſt border, and the plants will riſe plentifully in the following ſpring, ſome of which, when about three inches high, may be thinned out and planted in a ſhady border till autumn, when theſe, and all the others may be tranſplanted where they are to remain.

LYTHRUM, Willow-herb, *(Salicaria)* or Purple Looſe-ſtrife.

It furniſhes ſome hardy herbaceous, erect-growing, flowery perennials for ornamenting the pleaſure-garden compartments, riſing with upright ſtalks, from one to three or four feet high; adorned with cordate-lanceolate, and linear leaves; and terminated by long ſpikes of hexapetalous, very ornamental, purple flowers.

Claſs and order, *Dodecandria Monogynia.*

*Characters.*] CALIX, is monophyllous cylindric, having the brim indented in twelve parts alternately ſmaller. COROLLA, ſix oblong, obtuſe, patent petals, inſerted into the denticuli of the calix. STAMINA, twelve filaments, the upper ones the ſhorteſt, and aſſurgent antheræ. PISTILLUM, an oblong germen, ſubulate, declinated ſtyle, and riſing orbicular ſtigma. PERICARPIUM, an oblong, acuminated, unilocular, covered capſule, incloſing numerous ſmall ſeeds.

There are about nine or ten ſpecies, but not more than one in eſteem for our purpoſe, or that is commonly cultivated in the Engliſh gardens, which, however, comprehends ſome varieties.

LYTHRUM *Salicaria.*

*Salicaria, or Common Willow-herb.*] Hath a fibrated perennial root; upright, angular, purpliſh ſtalks, riſing three or four feet high; cordate-lanceolate leaves, oppoſite by pairs; and the ſtalk and branches terminated by long, erect ſpikes of reddiſh-purple, dodecandrous flowers; in July.

*Varieties.*] With round leaves—with long acute leaves—trifoliate leaved, growing three leaves

leaves at a joint——quadrifoliate, or four leaves at a joint—with quadrangular ſtalks—with hexangular ſtalks——with bright red flowers—purple-flowered—with verticillate, or whorled flowers.

This beautiful plant and varieties are reſidents of brook-ſides, and the like places in moſt parts of England, and are often diſregarded; they, however, merit culture in every curious garden for their ſtately growth and ornamental appearance of their elegant flowers, which adorn the top of the ſtalk in very long erect ſpikes.

They are all very hardy, perennial in root, and annual in ſtalk.

They may be employed to ornament any of the compartments of the pleaſure-ground, but are the moſt proſperous in moiſt, or ſomewhat ſhady ſituation, in which they will grow taller, ſtronger, produce larger ſpikes, and continue longer in beauty.

The plants may be eaſily obtained in the places of their natural growth, and are ſold at moſt of the nurſeries; and the ſeaſon for planting them is any time in open weather from October till March.

The propagation is by parting the roots, and by ſeed.

By parting the Roots.—Autumn, in October or November, is the beſt ſeaſon: the root may be divided into ſlips, preſerving fibres to each which if tolerable ſtrong, plant them at once where they are to remain; but if weak, ſet them in nurſery rows for a year.

By Seed —This is hardly worth practice, ſince the plants may be encreaſed with the utmoſt facility by roots; however the moſt ſucceſsful ſowing-ſeaſon is autumn, ſoon after the ſeeds are ripe, ſowing them in a bed or border of rich earth, and rake them in; they will riſe in ſpring; in ſummer, if too thick, thin out ſome and plant them in nurſery-rows till autumn; when both theſe, and thoſe remaining in the ſeed bed may be planted out for good, and will flower the next ſummer.

LUXURIANS, Luxuriant Plants, &c.—Theſe are ſuch that are greatly augmented in growth beyond their common natural ſtate; and it is obſervable of ſuch plants, &c. for the general part, that they rarely acquire that degree of perfection as plants of more moderate growth; and which ſtate of Luxuriance ſometimes happens through the exceſs of nouriſhment, and ſometimes by the nature of ſome particular plants.

But Luxuriance operates differently; it prevails ſometimes in the whole plant, ſometimes in particular parts of a plant, as in ſome of the ſhoots, and frequently in the flowers. We ſhall therefore conſider them under theſe three heads: 1. Luxuriant Plants—2. Luxuriant Shoots—3. Luxuriant Flowers.

'Luxuriant Plants and Trees.—Theſe as above obſerved, are ſuch as ſhoot conſiderably ſtronger than plants of the ſame ſpecies generally do, and is applicable both to herbaceous plants and trees, &c. and that very Luxuriant Plants and Trees never attain perfection ſo ſoon as moderate growers, as for example: moſt eſculent plants which ſhoot luxuriantly to leaves and ſtalks, &c. ſuch as cucumbers, melons, cabbage, cauliflowers, turneps, radiſhes, beans, peas, &c. never arrive ſo ſoon to perfection as thoſe of moderate growth, and ſuch plants as appear to be naturally of themſelves of that very Luxuriant nature are very improper to ſtand from which to ſave ſeed for propagation.

The ſame is alſo obſervable of fruit-trees; for ſuch as are very Luxuriant ſhooters are much longer before they attain a bearing ſtate, than thoſe of middling growth, nor do they ever bear ſo plentifully, nor the fruit attain ſuch perfection as in moderate-ſhooting trees: this Luxuriance happens ſometimes through exceſs of nouriſhment, as before obſerved, and ſometimes is the nature of the tree, and very frequently is acquired by unſkillful pruning, for it is very often the practice of bad pruners, that when wall or eſpalier trees aſſume a Luxuriant growth, to cut all the ſhoots ſhort, by which practice, inſtead of reducing the tree to a moderate ſtate of ſhooting, has increaſed its vigour, becauſe, as we have before occaſionally obſerved, the ſhortening of ſtrong ſhoots, promotes their throwing out ſtill ſtronger, and producing more abundant or ſuperfluous wood.

Therefore, in pruning very Luxuriant eſpalier and wall-fruit-trees, aſſiſt them in their own way, by training in plenty of ſhoots annually for a year or two, to divide the redundancy of ſap; that is, in training in the neceſſary ſupply of ſhoots, both in the ſummer and winter pruning, always leave them rather thicker than in the common practice, and moſtly at full length, unleſs it ſhall ſeem neceſſary to ſhorten any in ſome particular part of the tree, to force out a ſupply of wood to fill a vacancy; obſerving that ſome ſorts of fruit

fruit-trees ſhould never be ſhortened, except occaſionally for the purpoſe of procuring a ſupply of wood as juſt mentioned, which is particularly to be remarked in apples, pears, plums, cherries, figs, &c. for if ſhortening was to be practiſed to theſe ſorts, they would continue ſhooting every year ſo luxuriantly to wood, that they would never form themſelves into a proper bearing ſtate: even thoſe trees where ſhortening is neceſſarily practiſed in winter, to moſt of the annual ſupply of ſhoots, as in peaches, nectarines, &c. it, in caſes of Luxuriant growth, ſhould be very ſparingly performed, that is, not to cut any of the ſhoots very ſhort, and ſome of the moſt vigorous leave almoſt, or quite at full length.

This is the only method to reduce a Luxuriant tree to a moderate growth, and to a bearing ſtate; for by training the ſhoots thicker, and leaving them longer, and continuing it for a year or two, the redundant ſap conſequently having greater ſcope to divide itſelf, it cannot break out with that Luxuriance, as when it has not half the quantity of wood to ſupply with nouriſhment, as in the caſe of pruning ſhort; and by practiſing the above hints, a Luxuriant tree may in two years be brought to a moderate growth, and become a good bearer. See ESPALIERS, WALL-TREES, PRUNING, &c.

Luxuriance ſeldom occurs with any continuance in ſtandard-trees where permitted to take their natural growth, except ſometimes a ſtraggling ſhoot, which ſhould always be taken out by the rules mentioned in the following article.

[2]Luxuriant Shoots.—Theſe are applicable principally to trees and ſhrubs; more particularly to the fruit-tree kind, and eſpecially thoſe which undergo the diſcipline of an annual pruning; Luxuriant ſhoots, therefore, are frequently mentioned in the culture of the ſeveral ſorts of fruit-trees.

However, Luxuriant ſhoots are ſuch which ſhoot ſo vigorouſly in length and ſubſtance, as greatly to exceed the general growth of thoſe uſually produced on the ſame kind of plant or tree, and are ſometimes general, and ſometimes only happens to particular ſhoots in different parts of a tree, &c. and thoſe ſhoots denominated Luxuriant, are diſcoverable by their extraordinary length and thickneſs, and by their vigour of growth, which always greatly impoveriſhes the other more moderate ſhoots in their neighbourhood, and likewiſe the fruit, &c. and ſuch ſhoots very frequently occur in fruit-trees by the effects of pruning. When they are in general ſo, that is, all, or moſt of the ſhoots of an eſpalier or wall-tree are Luxuriant, manage them as above directed in treating of Luxuriant trees; but when luxuriance happens to particular ſhoots here and there in a fruit-tree, or indeed any other tree or ſhrub, under training, that ſuch ſhoots being both of ſuch a very Luxuriant nature as to draw the nouriſhment, or ſap, at the expence of all the adjacent moderate ſhoots on the ſame tree, and often by its vigorous irregular growth, cannot be trained with any degree of regularity; ſo that conſidering theſe diſadvantages of ſtraggling Luxuriant ſhoots, they ſhould for the moſt part, as ſoon as diſcoverable, in ſummer or winter pruning, be cut out, taking them off as cloſe as poſſible to the part of the branch from whence they originate, that no eye may be left to ſhoot again; unleſs, however, ſuch a ſhoot ſhall riſe in any part of a tree or ſhrub, where a further ſupply of wood may be requiſite, in which caſe it may be retained, and ſhortened as it ſhall ſeem convenient to force out a ſupply of more ſhoots laterally to fill the vacancy.

But, as above noticed, where a tree is wholly of a Luxuriant nature, producing almoſt in general Luxuriant ſhoots, leave them moderately thick, and train them along moſtly at full length, and by thus leaving a larger ſupply of wood for the ſap to divide itſelf, the tree in two ſeaſons will be reduced to a proper growth; when it may afterwards be managed according to the general rules exhibited under its reſpective genera.

[3]Luxuriant Flowers.—All double flowers may be conſidered as Luxuriant, eſpecially ſuch which have either the cup or corolla multiplied, or ſo augmented in numbers inward, as to exclude ſome part of the fructification, for the ſame is obſervable in flowers as in eſculent plants and fruit-trees, that Luxuriance tends to their imperfection in the original intention of nature; the flower being deſigned for perfecting the fruit and ſeed; but when the petals are multiplied to the diminution of the ſtamina, &c. ſo that no impregnation enſues, no fruit or ſeed can be produced, conſequently, by the Luxuriant augmentation of the corolla, plants often become barren.

Luxuriance in flowers, however, conſiſts of three modifications. Firſt, ſuch as have the petals multiplied, yet do not entirely

exclude the ſtamina. Secondly, ſuch in which, by the multiplicity of the petals, all the ſtamina are excluded, ſo that no impregnation can be effected. Thirdly, ſuch flowers as produce one out of another, as in the prolific anemone, &c.

But Luxuriant flowers which do not exclude all their ſtamina, are capable of impregnation, and conſequently produce ſeed.

The higheſt degree of luxuriance is often obſervable in carnations, anemones, ranunculus, poppy, lychnis, peony, narciſſus, violet, &c.

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# M.

MAGNOLIA, *(Magnolia)* Laurel-leaved Tulip-tree.

This genus conſiſts of moſt elegant ever-green and deciduous trees of North America, for ornamental plantations and the green-houſe; riſing with upright trunks, dividing upward into fine regular heads; adorned with noble large, oblong, ſimple foliage, and large novem-petalous flowers of remarkable fragrance; which, in America, their native ſoil, are ſucceeded by a large egg-ſhaped ſtrobilus, ſcaley fruit, compoſed of ſeveral compreſſed, roundiſh, unilocular capſules, containing large pendulous ſeeds, i. e. that being diſcharged from their departments, hang by long threads in a ſingularly curious manner; but the fruit never attains perfection in England, and is not of the eatable kind.

Claſs and order, *Polyandria Polygamia.*

*Characters.*] CALIX, is three petaliforme, oval, concave, deciduous leaves. COROLLA, nine oblong, concave, obtuſe petals, narrow at the baſe. STAMINA, numerous ſhort filaments inſerted into the baſe of the piſtillum, and linear antheræ attached to the ſides of the filamentum. PISTILLUM, numerous oblong-oval germina, very ſhort, recurved, contorted ſtyles, and longitudinal hairy ſtigmas. PERICARPIUM, an oval ſtrobilus, or cone, compoſed of compreſſed, roundiſh, almoſt imbricated, cluſtered, unilocular, bivalvular capſules, each containing one roundiſh, baccated ſeed, hanging by ſlender threads from the ſcales of the ſtrobilus.

There are but four ſpecies, all of the tree kind, one of them an ever-green, and one of the moſt beautiful in the world; the other three are deciduous, and alſo very beautiful. All the ſorts, though originally of American growth, proſper in our gardens in the full ground all the year; they, however, being ſomewhat tender while young, require protection from froſt, but afterwards may be turned out into the principal ſhrubbery plantations in the moſt conſpicuous parts, where they will appear exceedingly ornamental in their fine luxuriant foliage, in ſome reſembling the noble leaves of laurel, but much larger, as in ſome ſorts they are near a foot long and almoſt half as broad.

*Ever-green Kind.*

This is a noble tree, very diſtinguiſhable from all others, yet known by its ſingularly large, and beautiful ſhining leaves.

MAGNOLIA *Grandiflora.*

*Greater Grandiflorous Ever-green Magnolia.*] Riſeth with an upright ſtem, branching out upward into a regular head, ſeventy or eighty feet high; garniſhed with very large, ſpear-ſhaped, thick, firm, cloſe-ſitting, ever-green leaves, eight or ten inches long, and near half as broad, of a ſhining green above, and paler underneath; and from the ends of the branches, large pure-white flowers, of nine or ten broad-ſpreading petals; ſucceeded by oval, cone-like fruit, which never ripen in England.

*Variety.*] With leaves of a ſhining-green above, and of a ruſty colour underneath.

*Deciduous*

*Deciduous Kinds.*

Theſe ſorts though deciduous are moſt beautiful trees, when in foliage, and elegant furniture for the beſt ſhrubberies.

[2]MAGNOLIA *Glauca.*

*Glaucous-leaved Deciduous Magnolia.*] Riſes with an upright ſlender ſtem, branching ten or fifteen feet high, having a ſmooth white bark; oval oblong, deciduous leaves, three or four inches long, of a glaucous hoary colour underneath; and from the extremity of the branches white flowers, ſucceeded by conic ſtrobilus fruit, which never ripens in England.

This ſort is remarkable for retaining its leaves great part of winter, appearing like an ever-green.

[3]MAGNOLIA *Tripetala.*

*Tripetalate Magnolia, or Umbrella-tree.*] Riſes with an upright ſtem, branching about twenty feet high; very large lanceolate leaves, diſpoſed in circular rays horizontally, in form of an umbrella; and large white flowers, having the outer petals dependent.

The name Umbrella-tree is derived from the diſpoſition of its admirable large foliage, ſo as to reſemble the form of an umbrella.

[4]MAGNOLIA *Acuminata.*

*Acuminate Long-leaved Deciduous Magnolia.*] Riſes with an upright ſtem, branching fifteen or twenty feet high, having a ſmooth light bark; large oval-oblong, acuminate-pointed leaves, eight or ten inches long, and half as broad; and white flowers, having from nine to twelve petals; ſucceeded by conical fruit, not ripening in England.

All theſe four ſpecies of Magnolia are admirable fine ornaments for the principal ſhrubbery compartments; the grandiflorous kind alſo for the green-houſe, which is the moſt beautiful of all the ſorts; but all of them are remarkably ornamental in their large elegant foliage, which are univerſally ſimple, entire, and almoſt ſeſſile; and all the ſpecies after having acquired ſome conſiderable age and ſize, produce flowers here annually in June or July, are large, of a ſnowy white, and remarkable fragrance; and ſometimes on old trees are ſucceeded by the formation of fruit, but it never acquires maturity in this country.

The flowers of all the ſorts in their characteriſtic ſtate, conſiſt each of nine oblong obtuſe petals, and numerous filaments and germina, &c. ſee the *Characters.*

In the American woods where theſe trees grow naturally in great abundance, the flowers are numerous on each tree, continue a long time in bloom, and perfume the whole woods with their agreeable odour.

All the four ſpecies are of ſomewhat tender temperature, and liable to injury from froſt while young, the *Magnolia Grandiflora* moſt of all; but none of them, however, ſo tender but that they may be naturalized to this climate, after having occaſional protection in winter during their infant ſtate, by keeping them in pots three, four, or five years, in order to move to ſhelter of a frame or green-houſe in froſty weather; obſerving that the grandiflorous kind need this care the longeſt of any, the ſeedling plants of which generally requiring to be five or ſix years old before they can be truſted in the full ground finally; the other three ſorts, as they drop their leaves in autumn, their ſhoots become more hardened, and not ſo ſubject to the rigours of froſt, will generally ſucceed in the open ground after the ſecond or third winter; but all the ſorts ſhould be gradually hardened by expoſing them conſtantly to the full air ſummer and winter, in all mild or open weather, and only give ſhelter from froſt; and when tranſplanted into the full ground, it ſhould be done in March; but ſome of the ever-green *Magnolia* ſhould alſo be retained in pots as green-houſe plants.

The grandiflorous ever-green Magnolia is one of the moſt beautiful trees in nature, both in the procerity and grandeur of its growth; and in its luxuriant noble leaves, which renders the tree ſingularly conſpicuous and diſtinguiſhable, at all ſeaſons, and may be conſidered the fineſt ornamental ever-green yet known, both for the ſhrubbery and green-houſe. Remarking, as already obſerved, that as the trees of this ſort are impatient of froſt whilſt young, they ſhould be kept in pots a few years, in order to have ſhelter of a garden-frame or green-houſe occaſionally in winter, when froſts prevail; and even when thoſe intended for the ſhrubbery are turned out into the full ground, it is proper alſo to erect a ſort of frame-work of pliable poles, &c. archwiſe over each plant, in November, for the ſupport of a covering of mats in rigorous weather, for a few winters: it is likewiſe proper, as before noticed, to retain ſome in pots, to be managed as green-houſe plants; and if thoſe in the full ground ſhould ſuffer by the froſt, theſe will remain unhurt, and

be as a reſerve; obſerve, however, with reſpect to thoſe in the full ground, to endeavour to naturalize them gradually as much as poſſible, to ſtand our ordinary winters without covering, which undoubtedly may in time be effected, eſpecially thoſe plant raiſed by layers and cuttings from plants, which have been of ſome years ſtanding in the open ground.

The deciduous *Magnolias* are alſo remarkably ornamental trees, and ought to be introduced into every curious collection in ſhrubberies, where by their admirable fine foliage, they will exhibit an elegant variety. All theſe deciduous ſorts after having occaſional ſhelter two or three winters in their minor ſtate, will ſucceed tolerably in the open ground all the year without covering.

All the ſpecies, both ever-green and deciduous, are cultivated in the nurſeries for ſale, of which the firſt ſort, as being the moſt beautiful, and requiring more care in its culture, is generally pretty high rated.

The beſt ſeaſon for planting all the ſorts is in February and March, before they begin to make an effort for ſhooting, though as thoſe ſorts which are in pots may be turned out with the ball of earth about their roots, ſo as ſcarce to feel their removal, they may be occaſionally tranſplanted in October or begining of November; I, however, ſhould gegenerally prefer the ſpring-planting that they may be both firmly rooted, and inured to the ſoil, ſituation, and full air before winter.

Obſerve, that in the diſpoſition of all the ſorts in the ſhrubbery, as they are rather of a tender nature in their younger growth, it is proper to allot them a ſheltered ſunny ſituation, and dry ſoil; and all of them ſhould be ſtationed in the moſt conſpicuous point of view; and not too cloſely crowded with ſhrubs of inferior merit; they have alſo an admirable effect diſpoſed ſingly in different parts, particularly in open ſpaces of graſs-ground in the internal parts of the ſhrubbery plantations, the *Magnolia Grandiflora* in particular appear beautiful in this mode of diſpoſition; obſerving of this ſort, that whereſoever ſtationed, to allow it the occaſional ſhelter of an awning of mats in froſty weather, as before noticed.

### *Propagation, &c. of all the Sorts.*

The propagation of all the ſorts is by ſeed, alſo by layers and cuttings.

By Seed.—This is received annually from America, preſerved in ſand, and commonly arrives here early in ſpring, which ſhould be ſowed as ſoon after as poſſible in pots of light rich earth, half an inch deep; and the pots then either plunged in a moderate hot-bed, juſt to bring up the plants an inch or two high, or may be plunged in common earth under a warm wall or hedge, or in a frame, in the full ſun till the middle or latter end of April, then replunged in an eaſterly border open to the morning ſun; giving moderate ſprinklings of water in dry weather, and the plants will riſe the ſame year, thoſe having aid of a hot-bed, probably in April, and the others in May; obſerving to inure thoſe in the hot-bed timely to the full air. All ſummer let the ſeedlings raiſed by either method be very regularly ſupplied with water; at the approach of winter remove the pots into a green-houſe, or rather under a garden-frame, there ſheltered from froſt all winter, but indulge them with the open air all mild weather. In March if the pots are plunged in a bark hot-bed, under a frame two or three months, it will forward the ſeedlings greatly, being careful to give water, and harden them to the open air gradually, ſo as to be removed into it fully in June, to remain till October, then allow them ſhelter in winter as aforeſaid. Spring following plant them into ſeparate pots, and plunge them into a hot-bed as above, to ſet them forward, giving water, occaſional ſhade, and the benefit of the free air; and in June remove the pots to a ſhady border for the remainder of the ſummer; in winter give them ſhelter, as before, from ſevere froſt, but to have the full air in all open weather. The ſame care may be proper for two or three winters, when ſome of them may be turned out of the pots with the ball about their roots, into the full ground in a warm place, eſpecially the deciduous kinds; but the grandiflorous or ever-green ſort, being tender, muſt not be too ſoon committed to the winter's cold, they ſhould, therefore, be continued in occaſional ſhelter, as above, four or five years at leaſt, and when turned out into the open ground, it is proper to mat them occaſionally, as already hinted, in ſevere winters; ſtill retaining ſome in pots to be managed as green-houſe plants.

By Layers.—All the ſorts may alſo be propagated by this method, which may be performed in autumn or ſpring: chuſe the young pliable ſhoots, give them a gentle twiſt, or a

ſlit

ſlit in the part to be layed, and lay them in the uſual method: ſome will be rooted in one year, others probably not in leſs than two; then in March take them off and plant each in a pot, plunge them in a moderate hot-bed for a month or two to ſet them a-going freely at firſt, and they will form good ſtrong plants by autumn, allowing them ſhelter in winter for a year or two, then may be tranſplanted into the full ground.

By Cuttings.—This may be effected by aid of a bark-bed, particularly that in the ſtove, &c. In March or April plant ſome ſhort young ſhoots of the preceding year in pots, plunge them to the rims in the hot-bed, giving water and occaſional ſhade, many of them will be rooted the ſame year, when they muſt be inured by degrees to the open air, afterwards managed as the layers.

MALPIGHIA, Barbadoes Cherry.

The plants are ſhrubby ever-greens of the warm parts of America, &c. retained here in ſtoves for variety; riſing with branchy ſtems, from eight or ten to fifteen or twenty feet high, ornamented with oval and lanceolate entire leaves, and large pentapetalous flower, ſucceeded by baccaceous, cherry-ſhaped, red, eatable fruit.

Claſs and order, *Decandria Trigynia.*

*Characters.*] CALIX, is ſmall, five-leaved, connivent and permanent. COROLLA, five reniforme, concave, ſpreading petals, having long narrow ungues. STAMINA, ten broadiſh, ſubulate, erect filaments, and heart-ſhaped antheræ. PISTILLUM, a roundiſh germen, three ſlender ſtyles, and obtuſe ſtigmas. PERICARPIUM, a large globular, furrowed, unilocular berry, containing three angular, rough, ſtoney ſeeds.

There are eight or nine ſpecies, thoſe of them chiefly found in the Engliſh gardens are;

[5]MALPIGHIA *Glabra.*

*Glabrous-leaved Malpighia, or Common Barbadoes Cherry.*] Riſes with a ſhrubby, erect, ſlender ſtem, branching fifteen or twenty feet high; oval, entire, very ſmooth, oppoſite leaves; and from the ſides and ends of the branches long foot-ſtalks, each ſuſtaining an umbellate cluſter of roſe-coloured flowers; ſucceeded by roundiſh, baccaceous, red, cherry-like fruit.

[2]MALPIGHIA *Punicifolia.*

*Pomegranate-leaved Malpighia.*] Riſeth with a ſhrubby erect ſtem, branching diffuſely eight or ten feet high; oval, entire, ſmooth, oppoſite leaves; and from the ſides and ends of the branches ſhortiſh foot-ſtalks, each ſuſtaining one pale-red flower; ſucceeded by round baccaceous fruit.

[3]MALPIGHIA *Urens.*

*Stinging Malpighia.*] Riſes with a ſhrubby robuſt ſtem, branching fifteen or eighteen feet high; oblong-oval leaves, covered underneath with briſtly, decumbent, ſtinging hairs; and from the ſides of the branches aggregate foot-ſtalks, each ſuſtaining one purple flower; ſucceeded by oval, red fruit.

All theſe ſhrubs retain their leaves the year round; and begin flowering here about the end of autumn, continuing in conſtant ſucceſſion till ſpring, exhibiting a fine variety in the ſtove, where they are frequently ſucceeded by ripe fruit, which in moſt ſorts is of the ſize and ſhape of a ſmall cherry; is of an acid palatable flavour, and in the Weſt Indies, where the ſhrubs grow naturally in vaſt plenty, the fruit is eaten by the inhabitants inſtead of cherries; but thoſe of the firſt ſort are in moſt eſteem.

As the plants are natives of hot countries, they require a hot-houſe here, ſo muſt be always be kept in pots of rich earth, and retained in the ſtove, except about a month or two in the heat of ſummer, when they may be placed abroad; obſerving to ſupply them duly with water all the year.

Their propagation is by ſeed; ſow it in ſpring, in pots of rich earth, and plunge them in a hot-bed; and when the plants are three or four inches high, prick them in a ſeparate ſmall pots, give water, and plunge them in the bark-bed in the ſtove, where let them remain a year or two, then may be placed in any part of this department.

MALVA, Mallow.

This genus conſiſts of herbaceous perennials, biennials, and annuals, for medical uſes, and for ornament in gardens; and a ſhrubby plant for the green-houſe, riſing moſtly with erect ſtalks, from about half a yard to ten or twelve feet high, in different ſorts; garniſhed with large, roundiſh, lobated leaves, and quinquepetalous flowers.

Claſs and order, *Monadelphia Polyandria.*

*Characters.*] CALIX, is double, the exterior part is of three heart-ſhaped leaves, the interior is monophyllous and five-parted at the brim. COROLLA, is five obcordate plane petals, coaleſcing at their baſe. STAMINA, numerous monodelphous filaments, inſerted into

into the corolla, and kidney-ſhaped antheræ. PISTILLUM, an orbicular germen, ſhort cylindric ſtyle, and many briſtly ſtigmas. PERICARPIUM, a round depreſſed head, compoſed of numerous arilli, or ſeed covers, each having one kidney-ſhaped ſeed.

There are upwards of twenty different ſpecies, but not more than four or five generally known here; three or four of which are hardy herbaceous plants, and one ſhrubby exotic for the green-houſe.

*Hardy Herbaceous Kinds.*

The firſt and ſecond of theſe kinds, is the common Mallows of the field, for medicinal purpoſes, the others are ſometimes kept in gardens for variety.

[1]MALVA, *Sylveſtris (perennial).*

*Common Wild Upright Mallow.*] Hath a long, fibrated, tough, deeply-ſtriking root; upright ſtalks, two or three feet high; garniſhed with roundiſh ſeven-lobed leaves, having the lobes acute; and many reddiſh-purflowers from the ſides of the ſtalks.

*Varieties.*] With jagged leaves——with white flowers—with blue flowers.

This is perennial in root, but annual in ſtalk, grows wild every where: its root, leaves, flowers, and ſeed, are all medicinal.

[2]MALVA *Rotundifolia.*

*Round-leaved Proſtrate Wild Mallow.*] Hath proſtrate, or declinated ſtalks; roundiſh cordate, obſoletely five-lobed leaves, and purpliſh flowers.

This alſo grows wild, as the former.

[3]MALVA *Alcea (Biennial).*

*Malva Alcea, or Vervain Mallow.*] Hath long fibrated roots; upright ſtalks, branching two feet high; garniſhed with large, many-parted, roughiſh leaves; and large bright-red flowers from the ſides of the ſtalks.

*Varieties.*] With downy leaves——with white flowers

This ſort and varieties are all biennial, and grow wild in ſome parts of England.

[4]MALVA *Moſchata.*

*Malva Moſchata, or Jagged-leaved Vervain Mallow.*] Hath long fibrated roots; reniforme, deeply-cut, radical leaves; upright ſtalks, branching about two feet high; garniſhed with five-parted leaves, having the lobes pinnated into many parts; and large red flowers.

*Varieties.*] With roundiſh leaves—curled leaves—with white flowers.

They are all biennial, and grow wild here in ſome parts.

[5]MALVA *Criſpa (annual).*

*Curled-leaved Syrian Mallow.*] Riſes with an upright ſtrong thick ſtalk, ſix or eight feet high; cloſely garniſhed with large, angular, curled leaves, having the edges curiouſly furbelowed; and from the axillas glomerated cluſters of reddiſh flowers.

This is an annual of Syria, but hath been long retained in our gardens for ornament.

All the above five herbaceous Mallows flower in June, July, and Auguſt, ſucceeded by great plenty of ſeed in autumn.

*Shrubby Green-houſe Kinds.*

[6]MALVA *Capenſis.*

*Cape Shrubby Mallow.*] Riſes with a tree-like, erect, thick, durable ſtem, ten or twelve feet high, branching out laterally the whole length, the branches numerous and hairy; garniſhed with ſubcordate, laciniated, ſmooth leaves; and from the ſides of the branches, large deep-red flowers; appearing great part of the year.

*Variety.*] Gooſeberry-leaved Cape Shrubby Mallow.

With reſpect to the merit of all theſe ſix ſpecies of Malva, take the following hints.

As to the five herbaceous kinds; the two firſt of them are exceedingly uſeful in medicine, particularly the *Malva Sylveſtris*; but they both growing wild all over England, and being moſt troubleſome weeds, are rarely admitted into the gardens; but the third and fourth ſorts, although they grow naturally alſo in ſome parts of England, are introduced into many gardens for ornament and variety, and they effect a very conſpicuous diverſity in aſſemblage with other plants of ſimilar growth; and the *Malva Criſpa* is likewiſe, very proper to increaſe the variety in large pleaſure-grounds, which it effects moſt agreeably in the procerity of its growth and beautifully furbelowed leaves.

And the Cape Shrubby Mallow is very ornametal, and green all the year, but being a native of Africa, requires ſhelter in winter, therefore muſt be kept in pots of good earth, and placed in the green houſe collection.

*Propagation.*

All the herbaceous kinds are raiſed plentifully from ſeed. Sow them in ſpring, in a bed

bed or border of any common earth, either in patches where they are deſigned to flower, half an inch deep, or in a bed, and raked in, for tranſplantation, which ſhould be performed when the plants are three or four inches high; though I ſhould adviſe the annual ſort in particular to be ſowed in patches where the plants are to remain: ſeveral ſeeds in each patch, but leave only two or three of the beſt plants to grow to perfection.

The ſhrubby kind is alſo eaſily raiſed from ſeed in ſpring, but ſhould have the aid of a hot-bed, and when the plants are about three inches high, plant them in ſmall pots, harden them by degrees to full air, afterwards manage them as other green exotics.

MAMMEA, Mammee-tree.

There are but two ſpecies, both large evergreen trees of the hot parts of America and Aſia, and retained here in hot-houſes for variety; both of them adorned with large oval-oblong ſtiff leaves, and large quadripetalous, flowers, ſucceeded by large round eatable fruit, of a moſt exquiſitely rich flavour.

Claſs and order, *Polyandria Monogynia.*

*Characters.*] CALIX, is monophyllous, two-parted and deciduous. COROLLA, four large concave ſpreading petals. STAMINA, numerous ſhort filaments, and oblong antheræ. PISTILLUM, a roundiſh depreſſed germen, cylindric ſtyle, and a capitated permanent ſtigma. PERICARPIUM, a large ſpherical, baccaceous, fleſhy, unilocular fruit, terminated by the ſtyle, and contains four ſuboval rough ſeeds.

The ſpecies are:

[1]MAMMEA *Americana.*

*American Mammee-tree.*] Riſes with an upright, robuſt, rough trunk, branching ſixty or ſeventy feet high; large, oval-oblong, firm, ſplendid leaves, and having the ſtamina ſhorter than the corolla; and large round fruit.

[2]MAMMEA *Aſiatica.*

*Aſiatic Mammee-tree.*] Riſes with an upright large ſtem, branching fifty or ſixty feet high; covered with a cinereous, furrowed bark; large oval-oblong leaves; flowers, having the ſtamina longer than the corolla; and large tetragonous fruit.

Both theſe trees in their native ſoil produce abundance of fine fruit, as large as Catharine peaches, of a yellowiſh-green colour, and ſaid to be of a delicate flavour.

The firſt ſort grows in great plenty in the Weſt Indies; and the other in Java.

In this country they require to be continued conſtantly in the ſtove, ſo muſt be kept always in pots, and placed in that conſervatory, where they will cauſe a fine variety all the year with their large ſplendid foliage.

Their propagation is by ſeed, which arrives from America, &c. in ſpring. Sow it in ſmall pots of light rich earth, and plunge them in the bark-bed, where they will ſoon come up; give gentle waterings, and about Auguſt tranſplant them into ſeparate pots a ſize larger, plunging them in the bark bed, and give ſhade and water till freſh-rooted.

MANURE. This compriſes all ſorts of dungs, compoſts, and other materials proper for the improvement of land. See COMPOSTS, DUNG, &c.

Manure, therefore, is neceſſary to all ſoils, to repair them when exhauſted by the growth of vegetables, and to cure the defects of ſoils naturally bad, ſuch as to enrich and fertilize very poor land; to render very ſtrong or ſtubborn land more light, looſe, and pliable; and to render very light, looſe, dry ſoils more compact and moiſt; and wet land drier, &c. ſtrong moiſt land is the moſt improved by light manures, to open and looſen it; very light land by the more heavy and moiſt ſort of Manure; and wet land by dry light compoſts; ſome ſoils require Manure annually, others but once in two or three years; all of which in reſpect to garden-culture is fully exp'ained under the article DUNGS, &c.

The proper Manure for garden-ground being fully exhibited under the article DUNGS, it is needleſs to repeat it here.

But for corn-fields, &c. various ſorts of Manure are occaſionally uſed, according to the nature of the ſoil, and what different countries afford, as for inſtance:

All ſorts of horſe dung, neats dung, hogs-dung, farm-yard mulch; or a mixture of all or any of thoſe together, ſuits almoſt all ſorts of land; or a compoſt of any or all of thoſe, and chalk, lime, earth, mud of ponds and ditches, cleanſings of ſtreets, aſhes, rotten tanner's bark, rotten wood, and ſaw duſt, rotten vegetables, &c. or ſuch of any of theſe materials as can be had, and formed into a compoſt-heap to rot together, make a good Manure, both for corn and graſs-land.

For the method of making compoſt heaps, ſee COMPOST.

Rotten tanner's-bark alone, or in compoſt, is good Manure for ſtrong, cold, corn-land; and

and will alſo ſuit graſs, if applied the beginning of winter, for the rains to waſh it into the ground.

Rotten wood, and rotten ſaw-duſt, is very proper for ſtrong land.

Rotten vegetables, ſuch as all ſorts of weeds, and the refuſe of kitchen-gardens, &c. laid in heaps, and if mixed with mud or any earthy ſubſtance, and the whole lie to rot, they will make a tolerable good Manure for corn-land.

Green fern mowed down and laid in heaps to rot, is alſo uſed as Manure.

Marle, chalk, lime, &c. properly prepared, either alone, or in compoſt, are greatly uſed in many places as a dreſſing for corn-land.

Sea-ſand and ſhells, &c. being full of ſalts, are ſometimes uſed as Manure for ſtrong clayey and ſtubborn loamy ſoils.

Sea-weed is likewiſe employed as Manure, and, being full of ſalts, greatly improves corn-land.

Aſhes of all ſorts prove excellent Manure, eſpecially to all ſtrong cold or moiſt land; but coal aſhes are ſuperior to thoſe of wood, or of any other kind of vegetables; the farmers in the counties round London have experienced this, and they fetch them from that city by cart and waggon-loads, twenty or thirty miles diſtance; for in London they in general uſing coal-fuel, prodigious quantities of aſhes are daily made, and collected in carts and carried to the aſh-hills in the environs of the city; where numbers of people are employed in ſifting them, and ſell the ſiftings by the ſack or load to the farmers for Manure; alſo to the brick-makers for tempering their loam or brick-earth.

Bones of animals are alſo uſed as Manure for ploughed-land, where they are to be had in due quantities, as about London and other great cities.

Soot is alſo uſed as Manure to ſprinkle thinly over corn-land.

Malt duſt, containing a natural heat and ſweetneſs, proves an eligible Manure to moſt ſorts of land, but more particularly to ſtubborn, clayey, and ſour harſh ſoils.

Cleanſings of ſtreets laid in compoſt-heaps with horſe-dung, &c. makes excellent Manure both for corn and graſs-ground.

All Manure for ploughed or digged-land, ſhould be applied at the time the ground is to be tilled, and not ſpread about any long time before it is ploughed in, eſpecially in hot dry weather, which would exhauſt the ſalts, and other enriching particles; obſerving, however, where any hard ſubſtances, as marle, ſhells, &c. are uſed for Manure, it is proper to ſpread them abroad ſome conſiderable time, expoſed to the ſun, rains, and froſt, to pulverize, before they are ploughed into the ground.

The Manuring graſs-land ſhould generally be performed in autumn, about Michaelmas, or a little before or after, and not in the heat of ſummer, as is often practiſed, whereby the ſun's heat greatly exhauſts its moiſture and goodneſs; but when done in autumn, the rain ſoon waſhes the enriching particles into the ground, to the great benefit of the graſs, and encreaſe of the future crop.

MARANTA, Indian Arrow-root.

It conſiſts of two herbaceous perennial exotics of the Indies, kept here in hot-houſes for curioſity; have thick, knotty, creeping roots, crowned with long, broad, arundenaceous leaves, ending in points, and upright ſtalks, half a yard high, terminated by bunches of monopetalous, ringent, five-parted flowers.

Claſs and order, *Monandria Monogynia.*

*Characters.*] CALIX, is three ſpear-ſhaped leaves placed on the germen. COROLLA, is monopetalous and ringent, has an oblong, compreſſed, oblique, inflexed tube, the limb divided into ſix parts, the ſide ones large and repreſent a lower-lip. STAMINA, one membraneous filament, reſembling a ſegment of a corolla, and linear antheræ attached to the border. PISTILLUM, a roundiſh germen under the calix, ſimple ſtyle, and obſoletely trigonous ſtigma. PERICARPIUM, a roundiſh trigonous trivalvular capſule, and one oval hard ſeed.

The ſpecies are;

[1]MARANTA *Arundinacea.*

*Arundinaceous Maranta.*] Hath a thick, knotty, creeping, fleſhy root; crowned by long, broad-baſed, arundenaceous, or reed-like leaves, diminiſhing upward to a point; amidſt them upright, divided, branchy ſtalks, two feet high, terminated by bunches of white flowers.

[2]MARANTA *Galanga.*

*Galanga, or Indian Arrow-root.*] Hath a thick, creeping, fleſhy, juicy root; crowned by many ſmooth leaves, ſix or ſeven inches long; amidſt them upright, ſimple, or undivided ſtalks, half a yard high, terminated by looſe bunches of ſmall white flowers.

Both

Both the ſorts flower here annually in June and July, each flower conſiſting of one ringent, or grinning petal, ſix-parted at top. See the *Characters*.

The plants are perennial in root, but annual in leaf and ſtalk, ſometimes, however, the leaves of the ſecond ſort abide moſt part of the year.

Both the ſpecies being natives of the hot regions of the Indies, in this country they muſt be potted, and always kept in the hot-houſe, plunging them moſtly in the bark-bed, and refreſh them with moderate waterings, but more frequent when in a growing ſtate, and ſhift them into larger pots occaſionally.

Their propagation is by parting the roots, and ſpring is the proper ſeaſon, juſt before they begin to ſhoot; planting them in pots of light rich earth, and plunge them in the bark bed.

In America the roots of the *Galanga* being uſed by the Indians to extract the poiſon communicated by their poiſoned arrows, it derived the name of Arrow-root.

MARLE, a kind of clayey, or ſtrong earthy ſubſtance, of a chalky nature, generally placed deep in the earth, and is of a fertile quality, by its ſalt and oily properties, and is uſed to manure land. See MANURE.

Marle is of different natures in different parts.

Some is nearly of the nature of fullers earth, and is of a fat enriching quality, and of which there is blue, grey, yellow, and red coloured; the blue is eſteemed to be the beſt.

Some is a kind of ſoft ſtone, or rather of a flatey nature, of a blueiſh and grey colour, and is called ſtone or ſlate Marle, found commonly near river-ſides, and ſides of hills, &c. and though hard when dug, eaſily diſſolves by rain and froſt.

Clay Marle reſembles a fat ſort of clay or loam, and is ſometimes mixed with chalk ſtones.

Spitting or delving marle, is of a compact, ſtrong, fat temperature, generally of a brown colour; and is met with in the ſides of hills, and in ſome wet boggy grounds.

There are ſome other ſorts of Marle of leſs note, which lie very deep, and not ſo eaſily obtained.

The ſure ſign of the goodneſs of Marle is when it readily diſſolves by wet or froſt.

All the ſorts of Marle are accounted good manure for improving light, looſe, ſandy land in particular, eſpecially the fat kinds of Marle; though it may be applied with ſucceſs to moſt ſorts of land, obſerving, however, to uſe it more ſparingly on ſtrong ſoils, leſt it bind it too cloſe; but to ſandy ground there can be no danger, and proves one of the beſt dreſſings for ſuch kind of land.

It is commonly laid upon the land as it is taken from the pits; but ſome burn it, when one load will go as far as three or four.

MARTYNIA, *Martynia*.

This genus conſiſts of two tender herbaceous flowery plants of South America, an annual and a perennial, both for the hot-houſe; riſing with erect ſtalks, garniſhed with oblong ſimple leaves, and terminated by ſhort ſpikes of large monopetalous bell-ſhaped flowers.

Claſs and order, *Didynamia Angioſpermia*.

*Characters.*] CALIX, is five-parted and withering. COROLLA, is monopetalous, bell-ſhaped, the tube ventricoſe, and the limb five-parted at top. STAMINA, two long and two ſhort incurved filaments, and connivent connected antheræ. PISTILLUM, an oblong germen, ſimple ſtyle, and bilobed ſtigma. PERICARPIUM, an oblong, quadrangular, quinquelocular capſule, opening in two at top, and having oblong ſeeds.

The ſpecies are;

[1]MARTYNIA *Annua*.

*Annual Martinia.*] Riſes with an upright, robuſt, hairy, branching ſtalk, three feet high; garniſhed with large oval-oblong, angulated, entire, hairy, viſcous leaves; and from the forks of the ſtalk, and ends of the branches, ſhort ſpikes of large reddiſh-purple flowers.

[2]MARTYNIA *Perennis*.

*Perennial Martynia.*] Hath thick knotty roots, ſending up ſeveral robuſt, ſimple, ſucculent, purpliſh ſtalks, a foot high; garniſhed with oblong, ſerrated, thick, cloſe-ſitting leaves; and terminated by ſhort ſpikes of blue flowers.

Both the ſpecies flower here in July and Auguſt, and are very ornamental; each flower is of one bell-ſhaped petal, ſucceeded by large, oblong, thick, tough capſules, which in the annual ſort ripen here in autumn, but the ſecond ſeldom ripen ſeeds in England.

Theſe two plants being inhabitants of the hotteſt parts of the world, will not ſucceed here without artificial heat, ſo require the aid of a hot-houſe.

In reſpect to their duration, the firſt continues but one ſeaſon, the other ſeveral years by the root, but the ſtalks decay annually in autumn.

The firſt ſort is propagated by ſeed, ſowed in pots in ſpring, and plunge them in a hot-bed, or in the bark-bed in the ſtove, giving ſprinklings of water; and when the plants are two or three inches high, plant them out in ſeparate ſmall pots, which plunge alſo in the bark-bed, allowing them ſhade and water; and when they are a little advanced in growth, ſhift them into larger pots, managing them as above.

The ſecond ſort is propagated by dividing the roots in ſpring, planting each off-ſet in a pot of rich mould, and plunged in the bark-bed.

It may alſo be encreaſed by cuttings or the ſtalks planted in pots, and plunged in the bark-bed.

MAS *Planta*, a Male Plant; a dioecious plant, which produces male flowers only. See the claſs *Dioecia*.

All the plants of this kind belong to the claſs *Dioecia*, and the plants of which have Male and female flowers always on ſeparate roots, i. e. the Males on one plant, and the females on another; ſo that the plants furniſhing the Male bloſſoms, are properly Male Plants, and thoſe producing female flowers, are termed female plants. See FEMINEUS *Planta*.

Of this kind are ſpinach, hemp, *Myrica Meniſpermum*, and many others.

Male Plants never produce ſeed; which is produced only from the females; but both Male and female plants riſe from the ſame ſeed.

MASCULUS *Flos*, a Male Flower; a flower of the claſſes *Dioecia* and *Monoecia*, which is furniſhed with ſtamina, &c. or Male organs; but not the piſtillum ſtyle and ſtigma, the female organs. See STAMINA, PISTILLUM, and FEMINEUS *Flos*.

Male Flowers are produced either upon ſeparate plants from the females, as in all the plants of the claſs *Dioecia*, or on the ſame plant with the females, as in cucumber, melon, and all other plants of the claſs *Monoecia*, ſo that Male and female flowers, ſeparated on diſtinct plants, conſtitute the claſs *Dioecia*; and ſeparated on the ſame plant, the claſs *Monoecia*; thoſe of the latter are alſo androgynous, that is, a mixture of both Male and female flowers on the ſame plant. See ANDROGYNA *Planta*, and the claſſes *Dioecia* and *Monoecia*.

MATRICARIA, Feverfew.

The plants are hardy herbaceous perennials of upright growth, valuable in medicine, and to ornament the pleaſure garden, riſing two or three feet high, garniſhed with compound pinnated leaves, and terminated by many compound radiated flowers.

Claſs and order, *Syngeneſia Polygamia Superflua*.

*Characters.*] CALIX, a compound radiated flower, having a hemiſpherical general cup, compoſed of linear imbricated ſcales. COROLLA, the general flower is compound and radiated, having the diſc compoſed of numerous funnel-ſhaped hermaphrodite florets, five-parted and ſpreading at top, and oblong flat female florets compoſe the radius. STAMINA, in all the hermaphrodites five ſhort filaments and cylindric antheræ. PISTILLUM, an oblong germen, ſlender ſtyle, and in the hermaphrodites a bifid patent ſtigma, in the females two revolute ones. PERICARPIUM, none, many oblong naked ſeeds.

There are ſeveral ſpecies, but not more than one that have any particular merit, viz.

MATRICARIA *Parthenium*.

*Common Feverfew.*] Hath very fibrey cluſtering roots; crowned with numerous compound leaves; upright ſtalks branching on every ſide, two or three feet high; garniſhed with compound plane leaves, of ſeven oval folioles, cut into many parts; and all the branches terminated by many compound, radiated, white flowers, having a yellow diſc.

*Varieties.*] With full double flowers—with ſemi-double flowers—with double fiſtular flowers——with a fiſtular diſc and plane radius—with ſhort-rayed flowers—with rayleſs flowers——with rayleſs ſulphur-coloured heads—with finely curled leaves.

This ſpecies and all its varieties flower abundantly in June, each flower compoſed of numerous hermaphrodite and female florets, the former compoſe the diſc, the latter the radius, or border, and which, in the double and in the fiſtulous kinds, are very ornamental in gardens, but of diſagreeable odour, and are all ſucceeded by plenty of ſeed in autumn.

The plants are moſtly perennial in root, though in ſome moiſt ſoils are rather biennial or but of two or three years duration.

They

They have all a diſagreeable odour, but poſſeſs exceedingly great merit as medical plants, being very efficacious in many diſorders, and for which properties they are worthy of a place in every garden.

Conſidered alſo as plants of ornament, all the doubles and fiſtular flowered kinds, and the curled-leaved ſorts, are proper furniture for any of the compartments of the pleaſure-garden, where in aſſemblage they will effect a very agreeable variety, and the flowers will continue a month or ſix weeks in beauty.

*Propagation.*

The propagation is by ſeed, parting the roots, and by cuttings.

By Seed.—All the varieties are tolerably permanent from ſeed, where they ſtand ſeparate at a diſtance. Sow it in March and April, upon a bed or border of light earth, and rake it in; and when the plants are two or three inches high, plant them out in nurſery rows, ſix inches aſunder, to remain till autumn, then tranſplant them finally, and they will all flower the following ſummer.

By parting the Roots.—All the ſorts may be propagated in plenty by this method; but is effectual for continuing any approved variety of the double-flowered and curled-leaved kinds, or any other ſort; obſerving previous to this method of propagation, that in order to encourage the plants to afford ſlips, their flower-ſtalks, as ſoon as the flower begins to fade, ſhould be cut down cloſe, when the plants will more readily puſh out freſh heads, or offſets at bottom, both for continuing the roots, and for propagation; and they may be ſlipped or divided for encreaſe, either in autumn or ſpring.

By Cuttings.——This, like dividing the roots, is the certain method for continuing any particular variety. The cuttings of the young ſtalks planted in ſpring or ſummer, in a ſhady border, in the uſual way, will readily grow, and become good plants by autumn.

Remark: it is always proper to raiſe ſome of the beſt varieties every year or two from ſeed, as before directed, to ſupply the place of any old roots that may prove biennial.

MEDEOLA, Climbing African Aſparagus.

The plants are herbaceous, one of which is a climbing exotic of Africa, cultivated here as a green-houſe plant; is adorned with pinnated leaves, and hexapetalous, ſpreading, revolute flowers.

Claſs and order, *Hexandria Trigynia.*

*Characters.*] CALIX, none. COROLLA, ſix oblong-oval, ſpreading, revolute petals. STAMINA, ſix awl-ſhaped filaments, and incumbent antheræ. PISTILLUM, three corniculated germens, three ſtyles, and recurved ſtigmas. PERICARPIUM, a roundiſh, trifid, trilocular berry, and three heart-ſhaped ſeeds.

There are but two ſpecies, one of which a tall climber, the other a ſmall erect plant; but it is the climbing ſort that is uſually cultivated, of which there are two varieties, both for the green-houſe.

MEDEOLA *Aſparagoides.*

*Climbing African Aſparagus.*] Hath roots compoſed of ſeveral oblong, fleſhy knobs, united at top; ſending up annually long, climbing, very branchy ſtalks, winding round any ſupport four or five feet high; pinnated leaves, compoſed of oval, ſpear-ſhaped, alternate folioles; and from the ſides of the branches white flowers, ſingly, and by twos on each foot-ſtalk.

*Variety.*] Narrow-leaved; having weaker ſtalks, and longer and narrower leaves.

Both the varieties flower here in October and November, each flower of ſix ſpreading, rolled petals, and the ſeed ripen in ſpring.

They are perennial in root, and annual in ſtalk, which generally die to the ground every ſummer, and new ones ſhoot up in autumn, continue their growth all winter, and exhibit their leaves and flowers in full vigour.

They muſt be potted in light rich earth, and placed among the green-houſe plants to have ſhelter in winter; afford them moderate watering all the year, and larger pots occaſionally.

The propagation is by parting the roots; they furniſh off-ſets freely, and the proper time to take them off is in ſummer, when the ſtalks are decayed: plant each in a pot of good earth, and place them in the ſhade, and give occaſional light waterings; they ſhoot up ſtalks in the end of Auguſt, or early in September; place ſticks for them to twine upon, and in autumn move them into the green-houſe, where they will exhibit their foliage, and flower moſt part of winter.

MEDICAGO, *(Medica)* Medick.

This genus furniſhes a ſhrubby ever-green for the green-houſe and ſhrubbery, herbaceous

annuals for the pleaſure-garden, and that celebrated herbaceous perennial called Lucerne, for field culture, as fodder for cattle; all of them garniſhed with trifoliate leaves, and papilionaceous flowers.

Claſs and order, *Diadelphia Decandria*.

*Characters.*] CALIX, is monophyllous, bell-ſhaped, and divided into five acute ſegments. COROLLA, is papilionaceous, conſiſting of an oval, entire, reflexed ſtandard, two oblong-oval wings, and an oblong, bifid, obtuſe, reflexed carina, bending from the vexillum. STAMINA, ten diadelphous filaments, and ſmall antheræ. PISTILLUM, an oblong, incurved, compreſſed germen, ſhort ſtyle, and ſmall ſtigma. PERICARPIUM, a long, compreſſed, inflexed pod, incloſing ſeveral reniforme ſeeds.

There are many ſpecies, but not more than three which have merit for our collection, one ſhrubby ever-green, one herbaceous annual, and an herbaceous perennial.

*Shrubby Kind for the Green-houſe and Shrubbery.*

It is retained commonly as a green-houſe plant, but will alſo ſucceed in the full ground in a warm ſituation.

[1]MEDICAGO *Arborea.*

*Tree Medicago, or Shrubby Moon-trefoil.*] Hath a ſhrubby ſtalk, branching numerous and erectly ſix or eight feet high, having the younger branches covered with a hoary ſilvery down; cloſely garniſhed with trifoliate, ever-green leaves, each compoſed of three ſmall wedge-ſhaped lobes, hoary underneath; and from the ſides of the branches, long foot-ſtalks, terminated by cluſters of bright yellow flowers, ſucceeded by moon-ſhaped pods.

This is a beautiful ever-green and flowering ſhrub, and exhibits a plentiful bloom, from ſpring till autumn, and if ſheltered in winter, continue in flower moſt part of the year.

It being a native of Italy, it, with us, is conſequently a little tender, and requires ſhelter in winter, either of a green-houſe, or of a warm ſheltered ſituation in the full ground, for it will live in the open air in the ſhrubbery in moderate winters; but as being rather impatient of ſevere froſt, it is proper always to keep ſome alſo in pots to move to ſhelter among the green-houſe plants.

*Herbaceous Annual Sort for the Pleaſure-Garden.*

There are ſeveral annual ſorts, but not more than one proper as garden plants, which is comprehenſive of ſeveral varieties, known in gardens by the names of Snails, and Hedgehogs, &c. ſo called from the different odd ſhapes of their ſeed-pods.

[2]MEDICAGO *Polymorpha.*

*Polymorphous Medicago, or Snail and Hedgehog-trefoil.*] Hath trailing herbaceous ſtalks, branching diffuſely; garniſhed with trifoliate leaves, having indented ſtipulæ; and from the ſides of the branches papilionaceous yellow flowers; ſucceeded by ſnail-ſhaped pods, of many different forms in the varieties.

*Varieties.*] Common Snail Medicago, having large ſmooth pods, ſhaped and twiſted like a ſnail——Hedgehog Medicago, having large prickly ſnail-ſhaped pods, being armed with ſpines, pointing every way like a hedgehog—with turbinated pods—with globular pods—with orbicular pods—with long crooked pods—with double pods—with cluſtered pods——with twiſted pods——with jagged leaves.

All theſe plants are admitted into the pleaſure-ground principally for the ſingularity of their ſeed-pods; they are very hardy, and eaſily raiſed from ſeed in the common ground.

They all flower, and exhibit their ſingular ſeed-pods in June and July, ripening ſeeds in autumn.

*Herbaceous Perennial for Field Culture.*

[3]MEDICAGO *Sativa.*

*Cultivated Fodder-Medicago, or Lucerne.*] Hath a ſtrong fibrey, deeply-penetrating, perennial root; many upright, ſmooth, annual ſtalks, riſing two or three feet high; garniſhed with trifoliate, alternate leaves, having ſpear-ſhaped lobes; and from the axillas racemus foot-ſtalks of purple flowers; ſucceeded by contorted pods.

This ſpecies is in great eſtimation as an article of huſbandry for fodder, and is now cultivated in fields in great plenty in many places, is of ſuch quick growth, as often to afford four or five different cuttings every ſummer.

*Varieties of it are*] With yellow flowers—With ſaffron-coloured flowers—with violet-coloured flowers—with ſtriped flowers.

*Pro-*

*Propagation of three Species.*

First ſort.—The *Medicago Arborea* is propagated by ſeed and cuttings.

By Seed.—In March or April ſow it on a warm border in ſhallow drills, half an inch deep; or, to bring them forwarder, may ſow them in pots, and plunge them in a hot-bed juſt to bring up the plants an inch or two high, then harden them by degrees to the open air; in winter following, all of them raiſed in either method, require ſhelter from froſt; and in ſpring plant ſome ſingly in pots, in order to be managed as green houſe plants, and plant ſome alſo out in nurſery-rows, in the full ground in a dry warm ſituation, to take their chance the year round.

By Cuttings.—In March or April cut off ſome robuſt young ſhoots, form them into cuttings from ſix to eight or ten inches long, plant them in a bed of light rich earth, or, to forward them more, may plant ſome in pots and plunge them in a hot-bed; in either method, give occaſional waterings, and ſhade from the mid-day ſun; they will all be well rooted by the end of ſummer, and next ſpring they may be tranſplanted, ſome into ſeparate pots for ſhelter in winter; others in nurſery rows in the full ground.

Second Sort.—The *Polymorphous Medicago*, is propagated by ſeed, ſowed annually where the plants are to remain, in the latter end of March or in April. Sow them in patches towards the fronts of the borders, ſeveral ſeeds in each, but when the plants come up, and a little advanced in growth, thin them to one or two of the beſt in each patch, they will all flower, and exhibit their ſeed-pods in June and July.

Third Sort.—The cultivated *Medicago*, or Lucerne, is propagated by ſeed in open fields, ſowed commonly in drills, where the plants are to remain; and once raiſed, is of many years duration.

This plant is now greatly extolled as a moſt excellent and profitable ſummer's fodder for all ſorts of cattle; it comes up in great abundance, and is of ſuch quick growth, as often to afford four or five different mowings from May until September; is generally given to the cattle green, cutting it down when from about ten to fifteen inches high, while the ſtalks remain ſoft and tender; it is alſo ſometimes made into hay for winter uſe; though its chief uſes is to cut and eat green; for which purpoſe there is ſcarcely any plant in nature equal to it, as conſidering, in the firſt place, it preſents itſelf very early in ſpring, before any other green fodder can be had, and during ſummer affords ſeveral diſtinct mowings for all ſorts of cattle; therefore in conſideration of the goodneſs of the nature of the plant as fodder, and the great abundance it affords, it highly merits culture, and ſucceeds in almoſt any ſoil, and the ſame crops continue good for many years.

It proſpers beſt in light dry ſoils, and in which it is of longeſt duration; for in ſtrong, or very moiſt land, although it may flouriſh at firſt, yet it is often apt to go off in three or four years; whereas in ſuitable dry ground, the ſame crop will flouriſh for half a century, and often proſpers well in any dry barren ground, where hardly any other crop will ſucceed.

But to proceed to its propagation, which, as already obſerved, is by ſeed in the ſpring of the year.

The ground is to be prepared for the reception of the ſeed by proper ploughing or digging; but for large quantities in fields, ploughing is the eligible tillage, repeating it as the nature of the land ſhall require; together with repeated harrowings, to render the ſoil fine for the reception of the ſeed, which ſhould generally be ſowed in ſhallow drills, and the proper ſeaſon is March and April.

The ſeed is ſold by moſt of the nurſery and ſeedſmen from about eight pence to a ſhilling per pound, and from ſix or eight to ten or twelve pounds is ſufficient for an acre of land; that is, by drill-ſowing ſix or eight pounds will be enough; but by broad-caſt, it will require ten or twelve.

Drill-ſowing is the moſt commonly practiſed, and is the moſt commendable method of ſowing this ſeed; therefore draw ſhallow drills ſcarce an inch deep, and half a yard or two feet aſunder: ſow the ſeeds in the drills thinly with an even hand, and cover them in evenly with the earth, the depth of the drills; but this method of drill-ſowing is ſometimes performed with a drill-plough, furniſhed with a hopper, for ſowing the ſeed as the drills are formed, covering them in the above depth; ſome, however, ſow the ſeed by broad caſt, and harrow it in, as the moſt expeditious method; but by drilling, the plants ſtanding diſtant in rows, affords a much better opportunity of cleaning the crop from weeds by broad-hoeing.

In

In either method of ſowing, the plants will ſoon come up, and be ready for mowing in June or July.

Remark. However, the crop will require occaſional cleaning from weeds: if in rows it may be expeditiouſly performed by broad-hoeing, which ſhould be performed for the firſt time ſoon after the Lucerne comes up, and which muſt be repeated occaſionally, eſpecially after each mowing; but in broad-caſt ſown crops, the plants riſing promiſcuouſly, the hoeing cannot be ſo readily performed; it, however, muſt be done as well as poſſible, at the ſame time cutting up the weakeſt plants where too thick, leaving them all at proper diſtances for the broad-hoe to paſs between, for the plants ſpread exceedingly, provided they have room, and each ſend up numerous ſtalks.

In June or July the Lucern will be grown fifteen or eighteen inches high, or more, and begin to flower, when the firſt mowing may be performed; and the plants ſhooting up again ſtrongly, afford another cutting in autumn, which is all that ſhould be performed the firſt year.

The ſecond year, however, and every year afterwards, will afford three or four cuttings at leaſt; early in May the firſt crop will be ready for mowing; which may be performed when the plants are about a foot high, or a little more or leſs; and in a month or five weeks interval, another ſuch crop will be ready, and this ſucceeded by another, &c. but when deſigned to make it into hay, two or three crops may be ſufficient; or it may be fed off occaſionally with ſheep in ſpring, ſummer, and autumn; but which ſhould generally be taken off in winter, until about February or March.

MEDICINAL PLANTS. Plants that are uſed in medicine.

Vaſt numbers of plants poſſeſs Medicinal properties, and are uſed accordingly. A great many of which grow wild in this country, and great numbers are of foreign growth, and imported hither dried, from many different parts of the world; but many eminent medical plants are alſo cultivated here in our gardens, the principal ſorts of which are fully treated of as they occur in the courſe of this work under their reſpective genera.

A liſt, however, of the principal Medicinal Plants of our gardens and fields collected into one point of view in this place, may be convenient in aſſiſting the memory in ſelecting the proper ſorts for a collection, referring to their reſpective genera for their culture; we therefore exhibit in the following alphabetical arrangement, a liſt of the genera which furniſh the moſt material Medicnal Plants, pointing out thoſe ſpecies in each genera, by their reſpective ſpecific names, which are the moſt commonly uſed, conſiſting of herbaceous, perennials, biennials, and annuals, and of ſome trees and ſhrubs; remarking, that ſome of moſt of the ſorts are alſo valuable for other uſes beſides medicine; ſome for œconomical uſes, and ſome for variety and ornament in gardens; all of which are illuſtrated under their proper heads; obſerving alſo, that moſt of the ſorts in this liſt are hardy enough to grow here in the open ground, ſome of which grow wild in the fields, &c.

ACHILLEA Milfoil.
——— *Millefolium.*
——— *Ageratum.*
——— *Ptarmica.*
ACONITUM, Monk's Hood, &c.
——— *Anthora.*
ACORUS, Sweet Ruſh.
——— *Calamus.*
ACTÆA, Herb-Chriſtopher.
——— *Spicata.*
AGREMONIA, Agrimony.
——— *Eupatoria.*
ALCHEMITHA, Lady's Mantle.
——— *Vulgaris.*
ALLIUM, Garlick, Onion, Leek, &c.
——— *Sativum.*
——— *Scorodopræſum.*
——— *Victorialis.*
——— *Cepa.*
——— *Porrum.*
ALCEA, Holly-hock, or Roſe Mallow.
——— *Roſea.*
AMARANTHUS, *Amaranthus.*
——— *Caudatus.*
ALTHÆA, Marſh Mallow.
——— *Officinalis.*
AMOMUM, Ginger.
——— *Zinziber.*
ANCHUSA, Bugloſs.
——— *Officinalis.*
——— *Tinctoria.*
ANETHUM, Dill, &c.
——— *Graveolens.*
——— *Foeniculum.*
ANEMONE, Anemony.
——— *Nemeroſa.*
——— *Hepatica.*
——— *Pulſatilla.*

ANGELICA, *Angelica.*
——— *Archangelica.*
——— *Sylveſtris.*
——— *Lucida.*
ANTHEMIS, Chamomile.
——— *Nobilis.*
——— *Cotula.*
ANTIRRHINUM, Toad-flax.
——— *Majus.*
——— *Linaria.*
APIUM, Parſley, &c.
——— *Petroſelinum.*
——— *Dulce.*
——— *Graveolens.*
AQUILEGIA, Columbine.
——— *Vulgaris.*
ARISTOLOCHIA, Birthwort.
——— *Longa.*
——— *Rotunda.*
ARTEMISIA, Mugwort, Wormwood, &c.
——— *Vulgaris.*
——— *Abſinthium.*
——— *Abrotanum.*
——— *Pontica.*
ARUM, *Arum.*
——— *Dracunculus.*
——— *Maculatum.*
ASARUM, *Aſarabacca.*
——— *Europæum.*
——— *Virginicum.*
ASCLEPIAS, Swallow-wort.
——— *Vincetoxicum.*
ASPHODELUS, Aſphodel.
——— *Lutea.*
——— *Ramoſus.*
ASTRAGALUS, Liquorice Vetch.
——— *Tragacantha.*
ATRIPLEX, Orach.
——— *Hortenſis.*
——— *Portulacoides.*
ATROPA, Deadly-Nightſhade.
——— *Belladonna.*
——— *Mandragora.*
BELLIS, Daiſy.
——— *Perennis.*
BERBERIS, Berberry.
——— *Vulgaris.*
BETA, Beet.
——— *Cicla.*
——— *Rubra.*
BETONICA, Betony.
——— *Officinalis.*
BETULA, Birch.
——— *Alba.*
——— *Alnus.*
BORAGO, Borrage.
——— *Officinalis.*



BRIONIA, Briony.
——— *Alba.*
BUBON, Macedonian Parſley.
——— *Macedonicum.*
——— *Galbanum.*
CALENDULA, Marigold.
——— *Officinalis.*
CAPSICUM, *Capſicum.*
——— *Annuum.*
CARDAMINE, Lady's Smock.
——— *Pratenſis.*
CARTHAMUS, Baſtard Saffron.
——— *Lanata.*
——— *Tinctoria.*
CARUM, Caraway.
——— *Carvi.*
CENTAUREA, Centaury.
——— *Centaurium.*
——— *Benedictus (Carduus Benedictus.*
CHENOPODIUM, Wild Orach.
——— *Bonus Henricus.*
——— *Botrys.*
CICHORUM, Succory, or Endive.
——— *Endiva.*
CISTUS, Rock-roſe.
——— *Creticum.*
——— *Alba.*
COCHLEARIA, Spoon-wort, Scurvy-graſs.
——— *Officinalis.*
——— *Anglica.*
——— *Armoracia.*
CONVALLARIA, Lily of the Valley.
——— *Majalis.*
——— *Polygonatum.*
CORIANDRUM, Coriander.
——— *Sativum.*
CRATÆGUS, Wild Service, &c.
——— *Aria.*
——— *Oxyacantha.*
CRITHMUM, Samphire.
——— *Maritimum.*
CROCUS, Saffron.
——— *Sativum.*
CYCLAMEN, Sow-bread.
——— *Europæum.*
CYNARA, Artichoke.
——— *Scolymus*
CYNOGLOSSUM, Hound's-tongue.
——— *Officinale.*
DAPHNE, Spurge, Laurel, &c.
——— *Laureola.*
——— *Mezereon.*
DATURA, *Thorn Apple (Stamonium).*
——— *Metel.*
——— *Stramonium.*

DAUCUS, Carrot.
——— *Carota.*
DIANTHUS, Clove-gilliflower.
——— *Caryophillus.*
DICTAMNUS, Dittany.
——— *Albus.*
DIGITALIS, Fox-glove.
——— *Purpurea.*
DRACOCEPHALUM, Dragon's-head.
——— *Canarienſe.*
——— *Moldavica.*
ERYNGIUM, *Eryngo*, or Sea-holly.
——— *Maritimum.*
——— *Aquaticum.*
EUONYMUS, Spindle-tree.
——— *Europæus.*
EUPATORIUM, Hemp, Agrimony.
——— *Cannabinum.*
FAGUS, Beech-tree.
——— *Sylveſtris.*
——— *Caſtanea.*
FRAGARIA, Strawberry.
——— *Veſca.*
FUMARIA, Fumatory.
——— *Bulboſa.*
——— *Officinalis.*
GENISTA, Dyers Broom.
——— *Tinctoria.*
——— *Canarienſis.*
GENTIANA, Gentian.
——— *Lutea.*
GLECHOMA, Ground Ivy.
——— *Hederacea.*
GLYCYRRHIZA, *Liquoricæ.*
——— *Glabra.*
HEDERA, Ivy.
——— *Helix.*
HELLEBORUS, Hellebore.
——— *Foetidus.*
——— *Niger.*
HUMULUS, Hop-plant.
——— *Lupulus.*
HYACINTHUS, Hyacinth.
——— *Nonſcriptus.*
HYSSOPUS, Hyſſop.
——— *Officinalis.*
INULA, Elecampane.
——— *Helenium.*
JUNIPERUS, Juniper.
——— *Communis.*
——— *Sabina.*
LACTUCA, Lettuce.
——— *Sativa.*
LAVANDULA, Lavender.
——— *Spica.*
——— *Stoechas.*

LAURUS, Bay.
——— *Nobilis.*
——— *Saſſafras.*
LIGUSTICUM, Lovage.
——— *Leviſticum.*
LIGUSTRUM, Privet.
——— *Vulgare.*
LILIUM, Lily.
——— *Candidum.*
LUPINUS, Lupine.
——— *Albus.*
MALVA, Mallow.
——— *Alcea.*
——— *Sylveſtris.*
——— *Rotundifolia.*
MARANTA, Arrow-root.
——— *Galanga.*
MARRUBIUM, Hore-hound.
——— *Vulgare.*
MATRICARIA, Feverfew.
——— *Parthenium.*
MELISSA, Baum.
——— *Officinalis.*
——— *Calamintha.*
MENTHA, Mint.
——— *Viridis.*
——— *Sylveſtris.*
——— *Piperita.*
——— *Pulegium.*
——— *Cervina.*
MESPILUS, Medlar.
——— *Germanica.*
MIRABILIS, Marvel of Peru.
——— *Jalapa.*
——— *Dichotoma.*
MORUS, Mulberry.
——— *Nigra.*
MYRTUS, Myrtle.
——— *Communis.*
NARCISSUS, *Daffodil.*
——— *Pſeudo-narciſſus.*
NIGELLA, Fennel-flower.
——— *Sativa.*
NEPETA, Nep, or Cat-Mint.
——— *Cataria.*
NICOTIANA, Tobacco.
——— *Tabacum.*
——— *Ruſtica.*
NYMPHÆA, Water-Lily.
——— *Alba.*
OCYMUM, *Baſil.*
——— *Baſilicum.*
OPHOGLOSSUM, Adder's-Tongue.
——— *Vulgatum.*
ONONIS, Reſt-Harrow.
——— *Spinoſa.*

ORCHIS, Fool's-Stones.
——— *Bifolia.*
——— *Maſcula.*
ORIGANUM, Origany, Marjoram.
——— *Marjorana.*
——— *Vulgare.*
——— *Dictamnus.*
OXYLAS, Wood-ſorrel.
——— *Acetoſella.*
PÆONIA, Peony.
——— *Officinalis.*
PAPAVES, Poppy.
——— *Somniferum.*
——— *Rhœas.*
PHYSALIS, Winter-cherry.
——— *Alkekengi.*
——— *Viſcoſa.*
PIMPINELLA, Burnet, Saxifrage, Aniſeed, &c.
——— *Aniſum.*
——— *Saxafraga.*
PINUS, Pine-tree, Fir, &c.
——— *Picea.*
——— *Abies.*
——— *Larix.*
POLYGONUM, Knot-graſs.
——— *Biſtorta.*
——— *Perſicaria.*
——— *Hydropiper.*
POPULUS, Poplar.
——— *Nigra.*
——— *Tacamahacca.*
PORTULACA, Purſlane.
——— *Oleracea.*
POTERIUM, Burnet.
——— *Sanguiſorba.*
PRIMULA, Primroſe.
——— *Veris.*
PRUNUS, Plum-tree.
——— *Spinoſa.*
——— *Lauro-ceraſus.*
——— *Damaſcena.*
PYRUS, Pear-tree.
——— *Cydonia.*
——— *Malus Sylveſtris.*
RAPHANUS, Radiſh.
——— *Sativa.*
RHAMNUS, Buck-thorn.
——— *Catharticus.*
——— *Frangula.*
RHEUM, Rhubarb.
——— *Palmatum.*
——— *Raphonticum.*
——— *Undulatum.*
RIBES, Currant, &c.
——— *Nigrum.*
RIBES, *Rubrum.*
——— *Groſſularia.*
RICINUS, *Palma Chriſti.*
——— *Communis.*
ROSA, Roſe.
——— *Alba.*
——— *Damaſcena.*
——— *Canina.*
ROSMARINUS, Roſemary.
——— *Officinalis.*
RUMEX, Dock, Sorrel, &c.
——— *Patientia.*
——— *Acetoſa.*
RUSCUS, Knee-holly, Butchers-broom, &c.
——— *Aculeatus.*
——— *Hypogloſſum.*
——— *Hypophyllum.*
RUTA, Rue.
——— *Graveolens.*
SALVIA, Sage, Clary, &c.
——— *Officinalis.*
——— *Sclarea.*
——— *Horminum.*
SAMBUCUS, Elder-tree.
——— *Ebulus.*
——— *Nigra.*
SANTOLINA, Lavender-cotton.
——— *Chamæ-cypariſſus.*
SATUREJA, Savory.
——— *Hortenſis.*
——— *Montana.*
SCANDIX, Chervil.
——— *Cerefolium.*
——— *Odorata.*
SCILLA, Sea-onion.
——— *Maritima.*
SCORZONERA, *Scorzonera.*
——— *Humilis.*
SEDUM, Orpine, Leſſer Houſe-leek, &c.
——— *Telephium.*
SEMPERVIVUM, Live-ever, Greater Houſe-leek, &c.
——— *Tectorum.*
SINAPUS, Muſtard.
——— *Alba.*
——— *Nigra.*
SIUM, Skirret.
——— *Siſarum.*
SMYRNIUM, Alexanders.
——— *Oluſatrum.*
SOLANNUM, Night-ſhade.
——— *Dulcamara.*
——— *Lycoperſicon.*
SOLIDAGO, Golden Rod.
——— *Virga aurea.*

SORBUS, Service-tree.
——— *Domeſtica.*
SPARTIUM, Broom.
——— *Scoparium.*
SPINACIA, Spinach.
——— *Oleracea.*
SPIRÆA, *Filapendula.*
STACHYS, Baſe Hore-hound, All-heal, &c.
——— *Paluſtris.*
STATICE, Sea-pink, or Thrift.
——— *Limonium.*
SYMPHATICUM, Comfrey.
——— *Officinalis.*
TAMARIX, Tamariſk-tree.
——— *Gallica.*
TAMUS, Black-Briony.
——— *Communis.*
TANACETUM, Tanſey.
——— *Vulgare.*
TEUCRIUM, Germander.
——— *Marum.*
THUJA, Tree of Life *(Arbor Vitæ).*
——— *Occidentalis.*
THYMUS, Thyme.
——— *Vulgaris.*
——— *Serpyllum.*
TRAGOPOGON, (Goats-beard) Salſafy.
——— *Porrifolium.*
——— *Pratenſe.*
TRIFOLIUM, Trefoil.
——— *Officinale.*
TUSSILAGO, Colts-foot.
——— *Farfara.*
VACCINIUM, Bill-berry, or Whortle-berry.
——— *Myrtillus.*
——— *Oxyoccocos.*
VALERIANA, Valerian.
——— *Phu.*
——— *Officinalis.*
VERATRUM, White Hellebore.
——— *Alba.*
VERONICA, Speed-well.
——— *Officinalis.*
——— *Beccabunga.*
VIBURNUM, Wayfaring-tree.
——— *Lanata.*
VIOLA, Violet.
——— *Odorata.*
——— *Tricolor.*
VITEX, Chaſte-tree.
——— *Agnus caſtus.*
VISCUM, Miſtoe.
——— *Alba.*

The abovelist of Medicinal Plants, by being collected from the different parts of the work under one head, will greatly aſſiſt the memory in making a collection of theſe kinds, or for procuring them for uſe; many of which however, poſſeſs a conſiderable ſhare of merit for other domeſtic uſes, as well as for variety and ornament in gardens, as before ſuggeſted; all of which, together with their general culture, is fully explained under their reſpective genera, as above, as they alphabetically arrange in the courſe of the work.

MELIA, *Azedarach)* Bead-tree.

This genus conſiſts of ſome deciduous and ever-green exotic trees of the Indies, proper for the ſhrubbery, green-houſe and ſtove; riſing near twenty feet high; adorned with large pinnated or winged leaves, and cluſters of pentapetalous flowers.

Claſs and order, *Decandria Monogynia.*

*Characters.*] CALIX, is ſmall, monophyllous, and five-parted. COROLLA, five long, narrow, ſpear-ſhaped, ſpreading petals, a cylindric, monopetalous nectarium much indented at the brim. STAMINA, ten very ſmall filaments inſerted into the top of the nectarium, and ſmall oblong antheræ. PISTILLUM, a conical germen, cylindric ſtyle, and capitated quadrivalvular ſtigma. PERICARPIUM, a globular drupaceous fruit, containing a roundiſh, five-furrowed, quinquelocular nut, each cell having one ſeed.

There are but two ſpecies, one of which is a deciduous tree for the green-houſe and ſhrubbery, having an ever-green variety for the ſtove; and the other ſpecies is alſo of the temperature of ſtove-plants.

*Shrubbery and Green-houſe Kinds.*

1 MELIA *Azedarach.*

*Azedarach, or common Deciduous Bead-tree of Syria.*] Riſes with an upright robuſt ſtem, branching widely all around, about twenty feet high; large bipinnated, or double-winged deciduous leaves, of numerous folioles, each wing terminated by an odd one; and from the ſides of the branches long bunches of ſmall blue flowers; ſucceeded by roundiſh oblong, deeply five-furrowed, yellowiſh fruit, not eatable.

The fruit of this plant in Catholic countries is ſtrung like beads, to compoſe ſome ſort of roſaries; whence the name of Bead-tree.

This ſhrub is cultivated here ſometimes in the ſhrubbery, but more commonly as a green-houſe plant; for, being a native of hot countries, in theſe parts it is rather tender. Some ſhould be kept in pots to have ſhelter in ſevere weather,

weather, as a reſerve, in caſe thoſe in the ſhrubbery ſhould be deſtroyed.

It is very ornamental in its large, compound, doubly-winged foliage, which are often near two-feet long.

*Hot-houſe Kinds.*

*Variety.*] *(Melia Azedarach.)*

*Ever-green Semperflorous, Common Bead-tree of Ceylon*] Hath an upright ſtem, branching widely all around, about twenty feet high; large bipinnated ever-green leaves; and long paniculated bunches of blueiſh flowers, ſucceeded by roundiſh purple fruit; flowers always, or at leaſt moſt part of the year.

2 MELIA *Azadirachta.*

*Azadirachta, or Indian Bead-tree.*] Hath an upright robuſt ſtem, branching widely, and grows twenty feet high or more, covered with a dark-purple bark; pinnated or ſingly-winged leaves, of five or ſix pair of oblong lobes, terminated by an odd one; and from the branches long paniculated bunches of white flowers; ſucceeded by oval, olive-ſhaped, purple fruit, not eatable.

The flowers of all theſe ſhrubs are, ſeparately, ſmall, each of five ſpreading petals; but many being collected into long cluſters, they are tolerably conſpicuous.

All the three ſpecies merit culture in every garden accommodated with proper conveniences, they being very ornamental in their pinnated foliage.

The firſt ſort, however, will ſucceed tolerably in the open ground in a dry warm ſituation, though it is rather ſubject to be hurt by ſevere froſt: it is nevertheleſs proper to have ſome always in every curious ſhrubbery, to take their chance of all weathers, where, by the diſplay of their elegant bipinnated foliage, they will effect a very diſtinguiſhable variety: it is alſo proper to have ſome always in pots, and managed as green-houſe plants, both to encreaſe the variety, and be as a reſerve in caſe thoſe fully expoſed ſhould be killed in ſevere weather.

But the other two ſorts, the ever-green variety of the common Bead-tree, and the *Azadirachta*, being natives of very hot countries, require the almoſt conſtant aid of our ſtoves here.

The propagation of all the ſorts is by ſeed, aſſiſted by hot-beds.

Firſt Sort.—The ſeeds are obtained from abroad, and generally arrive in ſpring, which ſow in pots of light rich earth, and plunge them in a hot-bed of tanner's-bark or dung, under frame and glaſſes; in which they will come up in a month or ſix weeks, giving frequent waterings, and freſh air; and in June ſhould be fully expoſed in a moderate ſhade until October, then placed under a frame, &c. there to enjoy the free air all winter in open weather, and ſheltered from froſt; and in March following plant them in ſeparate ſmall pots, which plunge in a bark-bed, &c. tho' this is not abſolutely neceſſary, but if practiſed, it will greatly facilitate their rooting and firſt effort of growth; obſerving to indulge them freely with freſh air; and in June, as before obſerved, move them into it fully for the remainder of the ſummer, and allow them ſhelter again in winter, as above: which after being repeated three or four years, ſhifting them occaſionally into larger pots, ſome of the ſtrongeſt and moſt woody plants may be committed to the full ground under a warm wall, or in a dry ſheltered part of the ſhrubbery; and the proper ſeaſon for this work is the firſt fortnight in April; reſerve a quantity alſo in pots to have the management of green-houſe exotics, leſt thoſe in the open ground ſhould be cut off by the froſt.

Second and Third Sorts.—Both theſe ſorts are alſo propagated by ſeeds, ſowed in pots and plunged in the bark-bed, and managed nearly as the firſt ſort, only as being of much more tender quality, muſt be kept always in pots, and plunged in the tan-bed in the ſtove during their infant ſtate; afterwards, having acquired ſome conſiderable ſize and ſtrength, they may be placed in the open air for about two months in the heat of ſummer, and the reſt of the year in the hot-houſe; manage them as other woody exotics of that department. See STOVE PLANTS.

MELIANTHUS, Honey-flower.

Two tall, ligneous, floriferous, perennial exotics for the green-houſe and ſhrubbery, conſtitute this genus, riſing with durable ligneous ſtalks, four or five feet high or more; ornamented with large winged leaves; and terminated by long ſpikes of tetrapetalous flowers.

Claſs and order, *Didynamia Angioſpermia.*

*Characters.*] CALIX, is large, unequal, five-parted, and coloured. COROLLA, four ſpear-ſhaped, narrow, ſpreading, reflexed-pointed petals, and a monophyllous, ſhort, compreſſed, indented nectarium, ſituated in

the lower ſegment of the calix. STAMINA, two long and two ſhort filaments, and oblong, heart-ſhaped antheræ. PISTILLUM, a four-cornered germen, erect ſtyle, and quadrifid ſtigma. PERICARPIUM, a quadrangular, ſemi-quadrifid capſule, having acute diſtinct angles, and divided by partitions into diſtended cells, each having one globular ſeed.

There are but two ſpecies, both natives of Africa, and being rather of a tender nature, are very commonly treated as green-houſe plants; but they will alſo often ſucceed all the year in the open-ground, in warm dry ſituations; it is, however, proper to cultivate ſome by both methods.

The ſpecies are;

[1]MELIANTHUS *Major.*

*Major Melianthus, or Honey-flower.*] Hath a thick, ligneous, ſpreading root; many upright, ligneous, durable ſtalks, riſing ſix or eight feet high; garniſhed with large pinnated leaves, of four or five pair of ſerrated lobes, terminated by an odd one, and have ſingle ſtipulæ growing cloſe to the foot-ſtalks; and from the ſides and top of the ſtalks long ſpikes of chocolate-coloured flowers.

[2]MELIANTHUS *Minor.*

*Minor Melianthus.*] Hath a thick, ligneous, ſomewhat, ſpreading root; upright, ligneous, ſoft, durable ſtalks, riſing four or five feet high, garniſhed with ſmaller pinnated leaves, of four or five pair of folioles, terminated by an odd one, and have two diſtinct ſtipulæ; and from the ſides and ends of the branches long, looſe, pendulous bunches of flowers tinged with green, ſaffron-colour, and red.

Both the ſpecies flower about June; each flower is of four ſpear-ſhaped ſpreading petals; and each plant produces many flowers annually, but rarely are ſucceeded by ſeeds in England.

The plants are very ornamental, both in foliage and flowers, and merit admittance in every collection.

They are durable both in root and ſtalk, for although the ſtems are ſomewhat of an herbaceous nature, they become woody and abiding, more eſpecially if ſheltered occaſionally in winter; but thoſe fully expoſed are ſometimes killed down to the ground in ſevere weather, but the roots generally remaining ſound, ſend up new ſtalks again in the following ſpring.

Conſidered as green-houſe plants, it is proper to keep ſome always in pots to have ſhelter in winter, in caſe thoſe in the open ground ſhould be deſtroyed.

And for the pleaſure-garden, plant ſome in a dry ſoil, in a ſheltered warm expoſure.

Their propagation is eaſily effected by ſuckers, and cuttings.

By Suckers.—Theſe riſe in tolerable plenty from the root, eſpecially of the firſt ſort; and may be taken up in autumn or ſpring, with fibres, and planted ſome in pots for the green-houſe, others in a warm dry part of the nurſery, &c.

By Cuttings.—In ſpring or ſummer take off a quantity of young cuttings towards the tops of the ſtalks or branches, plant them in pots, and plunge them in a hot-bed, giving waterings, they will readily put out roots: or in default of a hot-bed, cover them cloſe with hand-glaſſes, giving occaſional ſhade, they will alſo take root; managing them afterwards as directed for the ſuckers.

MELISSA, Baum, or Balm.

It furniſhes hardy, fibrous-rooted, herbaceous perennials, for medical uſes, and variety in gardens, riſing with upright ſlender ſtalks, from one to two or three feet high, garniſhed with ſimple, oblong, oppoſite leaves, and verticillate cluſters of ſmall monopetalous ringent flowers.

Claſs and Order, *Didynamia Gymnoſpermia.*

*Characters.*] CALIX, is monophyllous, bell-ſhaped, angular, bilabiated at top, and permanent. COROLLA, is monopetalous, with a cylindric tube, and ringent above; having the upper lip ſhort, round, erect, arched, and indented in two, the lower one trifid, with the middle part largeſt. STAMINA, two longer and two ſhorter filaments, and ſmall antheræ that join by pairs. PISTILLUM, a quadrifid germen, ſlender ſtyle, the length of the corolla, ſituated with the ſtamina, under the upper-lip, and a bifid reflexed ſtigma. PERICARPIUM, none; four naked ſeeds lodged in the permanent calix.

There are ſeveral ſpecies, but the following perennials are the only ſorts for general notice.

[1]MELISSA *Officinalis.*

*Common Officinal Baum.*] Hath fibrey perennial roots; many upright, ſquare, branchy, annual ſtalks, riſing two or three feet high; garniſhed

garniſhed with oblong, indented, oppoſite leaves, by pairs, two or three inches long, and half as broad; and from the upper axillas verticillate cluſters of ſmall white flowers, upon ſingle foot-ſtalks.

*Variety.*] With variegated leaves.

The common Baum is a valuable medical plant, the virtues of which are univerſally known, and ought to be allowed a place in every garden, and may be encreaſed in great plenty by parting the roots.

The variegated kind exhibits an agreeable variety in the pleaſure garden.

[2]MELISSA *Grandiflora.*

*Grandiflorous Meliſſa, or Hetrurian Calamint.*] Hath fibrey perennial roots; upright annual ſtalks, riſing about a foot high; garniſhed with oblong-oval, indented, hairy, oppoſite leaves; and from the upper axillas verticillate cluſters of large purple flowers, on forked foot-ſtalks.

[3]MELISSA *Calamintha.*

*Common Calamint of the Shops.*] Hath fibrey perennial roots; upright, ſquare, branchy, hairy ſtalks, riſing a foot high; roundiſh, indented, oppoſite leaves; and verticillate cluſters of ſmall blueiſh flowers, on forked foot-ſtalks as long as the flowers.

All theſe three ſpecies of *Meliſſa* flower in June and July; each flower is of one ringent, labiated petal, and are diſpoſed in a verticillus, or whorls, in ſmall heads, or cluſters, going quite round the ſtem, on ſhort foot-ſtalks (ſee VERTICILLUS); and are ſucceeded by ripe ſeeds in autumn, but theſe are hardly ever wanted, ſince all the ſorts multiply greatly by root.

They are all perennial in root, but annual in ſtalk, and all ſo hardy as that they will grow in almoſt any ſoil and ſituation.

The plants are fragrant, warm, and accounted cordial and cephalic; their chief virtue reſides in the leaves.

As to their merit in gardens, they are proper both for uſe and ornament.

The *Meliſſa Officinalis*, or common Baum, merits a place in every garden for its admirable medical qualities, as well as for ſome culinary uſes; is eaſily propagated by ſlipping the roots, and ſhould be diſpoſed in the kitchen-garden among the aromatics, in rows about a foot aſunder (ſee the *Propagation*); and its variegated ſort may be diſpoſed in the pleaſure-ground. So refreſhing is the ſmell of both the varieties, ſo ſalutary and cooling when made into tea, by way of medicine, that they have the firſt claim to a place in our gardens. Great quantities of the common green ſort are cultivated in the gardens about London for ſupplying the markets, and is of ſuch quick growth, that it often affords three or four cuttings each ſummer, to cut young for immediate uſe; though when wanted for principal medical purpoſes, or to dry for keeping, it ſhould generally ſtand till arrived nearly at full growth, and juſt beginning to flower, then cut it in dry weather, and dry it in the ſhade, as directed for the mint. When any is deſigned for market, either young or at full growth, tye it in bunches, a good handful in each; which in Londen ſell at from ſix pence to a ſhilling per dozen of bunches.

The ſecond ſort is commonly introduced into pleaſure-gardens, as a plant of ornament and variety.

But the third ſort is chiefly conſidered as a medical plant, though inferior to the common Baum, and as it grows wild in England, is rarely cultivated, except in phyſic gardens.

*Propagation of all the Sorts.*

The propagation of all the ſorts is effected plentifully by parting the roots, which encreaſe exceedingly by off-ſets annually.

Autumn or ſpring is the proper ſeaſon for this work, though it may be done any time in open weather, from the decay of the ſtalk in autumn until ſpring, before new ones begin to ariſe; the moſt eligible ſeaſon, however, is September or October, that the off-ſets may take good root before winter, and be firmly eſtabliſhed againſt ſpring; particularly the common Baum.

The method is, the whole root may either be taken up and divided into as many ſlips as are furniſhed with fibres; or the main root may ſtand, and ſlip off a quantity of off-ſets around the out-ſide; plant thoſe of the common ſort, &c. for uſe, in the kitchen-garden, in four-feet wide beds, in rows of a foot or eighteen inches aſunder, and a foot diſtance in each row; they will ſpread and encreaſe into large bunches the following ſummer, and afford a good cutting or two the ſame year; thoſe intended for ornament or variety, ſuch as the variegated common Baum, and the and the Grandiflorous *Meliſſa*, ſhould be diſperſed ſingly in the different compartments where they are wanted.

All the culture theſe plants require is keeping them clean from weeds: and cut down all remaining ſtalks in autumn; at which time alſo clear off all weeds from the beds of com-

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mon Baum, and dig the alleys and ſpread a little of the earth over the ſurface of the beds between the plants, whereby the beds will remain neat all winter, and it will prove beneficial to the plants.

A plantation of Baum will remain in good condition ſeveral years; though if renewed every third or fourth year, is the way to continue a ſucceſſion of crops in full perfection.

MENTHA, Mint, Penny-Royal, &c.

The plants are hardy, herbaceous, aromatic perennials for the kitchen-garden, of admirable ſalutiferous properties, both for culinary purpoſes and medicine; have all creeping perennial roots, ſending up ſtalks annually; ſome erect and two or three feet high, others trailing and ſcarce a foot long; all the ſorts are garniſhed with ſimple, oblong, and oval leaves, and terminated by verticillate ſpikes, and cluſters of numerous, ſmall, monopetalous, tubulous flowers.

Claſs and order, *Didynamia Gymnoſpermia*.

*Characters.*] CALIX, is monophyllous, tubular, erect, five-parted, and permanent. COROLLA, is monopetalous, tubular, erect, and divided into four parts, the upper largeſt and emarginated. STAMINA, four didynamious filaments, and roundiſh antheræ. PISTILLUM, a quadrifid germen, ſlender ſtyle, and ſpreading bifid ſtigma.. PERICARPIUM, none; four ſeeds lodged in the calix.

To this genus is now joined the *Pulegium*, or Penny-Royal.

There are many ſpecies of *Mentha*, moſt of which grow wild in this country by the ſides of brooks, rivers, and watery ditches; but of which there are ſeldom more than three ſpecies cultivated, viz.—common green Spear-Mint—Pepper-Mint—and *Pulegium*, or Penny-Royal.

The moſt material ſpecies are;

[1]MENTHA *Viridis*.

*Green Mint, or common Spear-Mint.*] Hath long creeping very ſpreading roots; upright, ſquare, ſingle, green ſtalks, riſing two or three feet high; garniſhed with oblong, ſerrated, cloſe-ſitting, ſmooth, very green leaves; and the ſtalks terminated by purpliſh flowers, in oblong erect ſpikes; the ſtamina longer than the corolla.

*Varieties.*] Broad-leaved—narrow-leaved—curled-leaved—variegated-leaved.

This is the ſpecies of *Mentha* the moſt commonly eſteemed and cultivated in kitchen-gardens for all culinary uſes, as for ſauces, ſallads, &c. and for ſeveral medical purpoſes: and the curled leaved and variegated ſorts of it, are employed in the pleaſure-garden for variety. It grows wild in England, but has been long cultivated in gardens, and is ſuperior in quality to the two immediately ſucceeding ſpecies, which are alſo of the Spear-Mint kind.

The appellation Spear-Mint is derived from ſpear-like form of the ſpikes of flowers.

[2]MENTHA *Sylveſtris*.

*Wild, long, hoary-leaved Spear-Mint.*] Hath long, thick, ſpreading root; upright, ſquare ſtalks, two feet and a half high; oblong, ſerrated, hoary, cloſe-ſitting leaves; and the ſtalks terminated by pale-red flowers in oblong erect ſpikes, the ſtamina longer than the corolla.

[3]MENTHA *Rotundifolia*.

*Round-leaved Spear-Mint.*] Hath long ſpreading roots; upright ſtalks, two feet high; large, roundiſh, rough, crenated, cloſe-ſitting leaves; and the ſtalk terminated by flowers in oblong erect ſpikes.

Theſe laſt two ſpecies, *Mentha Sylveſtris* and *Rotundifolia*, grow wild here in moiſt places, are often diſtinguiſhed by the names of Horſe Mint; and are ſometimes cultivated, though are ſuppoſed inferior to the firſt ſpecies, *Mentha Viridis*, which is very diſtinguiſhable from both theſe ſpecies; as alſo from the following:

[4]MENTHA *Piperita*.

*Pepper-Mint.*] Hath long, thick, creeping roots; upright, branchy, purple ſtalks, two feet and a half high; garniſhed with oval-oblong, ſerrated, dark-green leaves, having foot-ſtalks; and the ſtalks and branches terminated by purple flowers in roundiſh heads, the ſtamina ſhorter than the corolla.

This ſpecies is of a hot biting taſte; is in univerſal eſtimation as a medicinal herb, greatly uſed for diſtilling, and of which is prepared that fine ſalutary cordial, called Pepper-Mint Water.

The following varieties of *Mentha* are of different ſpecies, and cultivated principally for variety—Orange Mint, having roundiſh leaves, ſmelling like orange-peel—gold ſtriped orange Mint—yellowiſh orange Mint—reddiſh orange Mint—hoary white Mint—ſilvery ſpotted Mint—hoary variegated white and green Mint——variegated white and green, tinged with red. Moſt of theſe varieties are

ſtrongly ſcented, ſome like an orange, others reſembling baum, and ſome like penny-royal.

*Penny-Royal Kinds.*

5MENTHA *Pulegium.*

*Pulegium, or Penny-Royal.*] Hath ſmall, fibrey, very ſpreading roots; ſmall, trailing, roundiſh, rooting ſtalks, ſpreading every way, taking root as they advance; garniſhed with ſmall, oval, obtuſe, crenated leaves; and the ſtalks terminated by verticilli of purple flowers, having the ſtamina longer than the corolla.

This ſpecies is a fine aromatic; it grows wild upon commons, &c. in many parts of Britain; and is cultivated in kitchen-gardens as a culinary herb.

6MENTHA *Cervina.*

*Cervine Upright Penny-Royal.*] Riſes with erect ſtalks, branching on every ſide, a foot and a half high; garniſhed with linear or very narrow thickiſh leaves; and terminated by verticilli of purple flowers.

All theſe ſix ſpecies of *Mentha*, and reſpective varieties, are perennial in root, but the ſtalks riſe in ſpring and decay in autumn.

They flower in June and July: the flowers are moſtly very ſmall, each of one tubular petal, of no beauty, and are ſucceeded by ripe ſeeds in autumn; but the ſeeds are rarely uſed, the plants being all generally propagated either by parting the roots, by young off-ſet plants, or by cuttings.

The plants are all exceedingly hardy, and proſper in any common ſoil of a garden.

They are all of a warm, fragrant, aromatic, and cordial nature, and their virtues reſide in their ſtalks and leaves, and moſt of the Mint kinds poſſeſs excellent medical properties.

With reſpect to their particular merit as garden plants; the common green Spear-Mint is valuable both as a culinary and medical herb; but the Pepper-Mint principally for medical uſes, and for which it is greatly eſteemed, and is generally diſtilled: and the Penny Royals are proper both for kitchen uſes and medicine. Obſerving, that for all of which purpoſes they merit culture in every kitchen-garden, where they ſhould be diſpoſed chiefly in four-feet wide beds, having foot-and-a-half alleys between, the plants, placed in rows lengthways in the beds, ſix or ſeven rows in each, as directed in their propagation.

For kitchen uſes the common green Mint and Penny-Royal are the moſt proper whilſt young and tender, as in ſpring and beginning of ſummer; but by cutting down ſome of their ſtalks occaſionally in ſummer and autumn, a ſucceſſion of young ſhoots may be continued from Mint until October or November; and by the aid of hot-beds, young Mint may be obtained all winter until the common crop comes up in ſpring, as directed in their propagation.

But when any of the ſorts of *Mentha* are required for drying to keep, or are wanted for diſtilling or other medical uſes, they ſhould be permitted to grow up to their full height, till juſt beginning to flower; they are then in the greateſt perfection for thoſe purpoſes.

When any of theſe plants are intended to be dried for keeping for winter uſe, cut them in dry weather, and ſpread them in a dry airy place to dry, but not in the ſun, which would dry them too faſt, and exhauſt their goodneſs; therefore mark this, and ſpread them, or hang them up in bunches, where they may be out of the wet and ſun, and dry gradually.

*Propagation of the Mint Kinds.*

Previous to the work of propagation we will in the firſt place juſt hint, that for the reception of all the ſorts for uſe, prepare, in the kitchen garden, four-feet wide beds, having foot-and-half alleys between, for the convenience of going in to clean, water, and cut the crops, as alſo for earthing the beds a little in autumn, by way of dreſſing, both for neatneſs and to encourage the plants.

But to the propagation: all the ſorts of Mint are propagated either by parting the roots, by young off-ſet plants, or by cuttings.

By Parting the Roots.—In autumn or early in ſpring, before the young ſhoots begin to appear, dig up from any old plantation a quantity of roots, and divide them into ſmaller parts, and of which chuſe the ſtrongeſt and freſheſt for planting; then proceed to plant them in drills, which draw with an hoe lengthways the bed, an inch and a half deep, and half a foot aſunder, ſeven in each bed; and along the bottom of each drill place the roots of the mint thinly, covering them over with the earth, to the depth of the drills, then lightly rake the ſurface ſmooth, and the work is done.

They will readily grow, and afford plenty of young Mint the enſuing ſpring and ſum-

mer for ſallads, and culinary uſes; alſo, if ſuffered to run up, will afford one or two good cuttings at full growth for drying, or for diſtilling.

By Young Plants.——In beds of Mint of ſome ſtanding, young ſhoots riſe numerouſly in ſpring, ſo as to admit of thinning; and a quantity of the moſt robuſt of which, drawn out with fibres at their bottom, form fine ſets or plants for making a new plantation; therefore in April or May, when the ſhoots are advanced five or ſix inches long, take the opportunity of ſhowery weather, and proceed to take up a quantity of the ſtrongeſt, having a knife to aſſiſt in raiſing and ſeparating them from the old roots, they will readily riſe with roots to each; then proceed with line and dibble to plant them in rows, ſix inches apart, and four inches aſunder in the rows, ſeven rows in each bed, each plant half way into the ground, and finiſh with a good watering, repeating it occaſionally; and they will very ſoon take root, ſpread at bottom, and afford a full crop the ſame year.

By Cuttings.—In May or June, in moiſt weather, cut off a quantity of the ſtrongeſt ſhoots or ſtalks near the bottom, and divide them into cuttings ſix inches long: plant them by dibble in rows, ſix inches aſunder, in beds as above, give water directly, and repeat it in dry weather; they will ſoon take root, ſpread at bottom and produce a full crop the ſame ſummer.

The above three methods of propagation holds good with all the ſorts of Mint.

Obſerve, however, thoſe deſigned to form variety in the pleaſure-garden ſhould be diſpoſed in patches in different parts.

A plantation of Mint for uſe, will afford ſeveral cuttings every ſummer, when it is only required young for preſent uſe, for culinary purpoſes; but when required for drying to keep till winter, or wanted green for medical uſe, they ſhould generally be ſuffered to ſtand until July, till nearly full grown, and juſt coming into flower; which being then cut down cloſe, the roots will ſend up another crop fit to cut again towards Michaelmas: each cutting, whether to be cut young, or when at full growth, ſhould always be cut as cloſe to the ground as poſſible.

When any is deſigned for market, bind them in bunches, a large handful in each, they ſell at about nine pence or a ſhilling per dozen.

The general culture of all the ſorts, is clearing them from weeds in ſpring and ſummer, cutting down all remaining ſtalks every autumn; clearing off alſo any autumnal weeds; and in October or November dig the alleys, and ſpread a little of the earth over the beds; this will give an air of culture and neatneſs, and prove beneficial to the crop.

A plantation of Mint, &c. will be of many years duration, but to have a conſtant ſucceſſion of good full crops, a freſh plantation ſhould be made every four or five years.

*Forcing Mint for Winter Uſe.*

Young green Mint is often required in winter for ſallads, ſauces, &c. but this can only be obtained by aid of hot-beds, and the common green Mint is the propereſt ſort; therefore, any time in winter from November until the beginning of February, a hot-bed may be made for this purpoſe. Make it but moderate, about two feet thick of dung will be ſufficient, and covered with garden-frames and glaſſes, or in default thereof, may be arched over and covered with mats; as ſoon as it is made and framed, earth it over with rich mould, ſix inches thick, then take up a quantity of roots out of the natural-ground bed, and ſpread them cloſe together upon the ſurface of the earth of the hot-bed, and mould them over cloſely an inch deep with fine earth, and put on the lights, or if mat-coverings are uſed, cover only on nights, and bad weather; but frames and glaſſes are the moſt eligible for the middle of winter; obſerving to tilt the lights to let off the ſteam, and to admit freſh air: the plants will ſoon come up plentifully, when continue to admit freſh air in fine weather, and give moderate waterings, and they will ſoon be ready for uſe.

When the plants thus raiſed are an inch or two high, or a little leſs or more, they may be cropped for uſe; they will readily break out again, and freſh ſhoots riſe from the bottom; ſo that the ſame bed will furniſh a ſupply of plants a long time; and two beds made at different times, may be ſufficient for the whole winter.

By the above practice of forcing Mint, you may obtain it young and green from the time the natural ground Mint goes off in autumn, until it comes in again in ſpring.

When it is, however, intended to force Mint every winter, a freſh plantation ſhould be made annually in the open ground for that purpoſe, to furniſh a ſufficiency of roots fit to take up at forcing time, without diſturbing thoſe of the principal crop.

*Penny-*

*Penny-Royal Kinds.*

Both the Penny-Royal ſpecies delight in a moſt ſoil; they, however, will both proſper in any good earth of the kitchen-garden.

They are propagated in great plenty either by ſlipping their roots, in autumn or ſpring, or by cuttings of their rooting-ſtalks, which ſpreading upon the ground emit roots from every part; and ſhoots of them may be taken off plentifully in ſpring, each well furniſhed with roots; the ſlips or cuttings in either way, are to be planted by dibble, in rows a foot aſunder; they will quickly ſet to growing, and ſpread about each way, and furniſh a full crop for uſe in ſpring and ſummer.

Their culture is nearly the ſame as the Mint, and a plantation will be of ſeveral years duration.

MENISPERMUM, Moonſeed.

It furniſhes ſome hardy climbers of America, for the ſhrubbery, riſing with climbing, ligneous, durable ſtalks, twining round any ſupport twelve or fifteen feet high, garniſhed with roundiſh peltate leaves, and bunches of polypetalous dioecious flowers.

Claſs and order, *Dioecia Dodecandria.*

*Characters.*] CALIX, male and female flowers on ſeparate plants, having a perianthium of two ſhort narrow leaves. COROLLA, four exterior oval petals, and eight oval concave interior ones. STAMINA, twelve or more filaments in the males, and ſhort quadrilobed antheræ, and in the females eight filaments, having the antheræ barren. PISTILLUM, two ſmall, oval, incurved germina, ſolitary recurved ſtyles, and bifid ſtigma. PERICARPIUM, two roundiſh, reniforme, unilocular berries, having one large reniforme ſeed.

The chief ſpecies are;

[1]MENISPERMIUM *Canadenſe.*

*Canada Round-leaved Moonſeed*] Riſes with ſeveral climbing ligneous ſtalks, twining upon ſupport twelve or fifteen feet high; large peltated, cordate, roundiſh, angular leaves, on long twining footſtalks; and from the axillas looſe bunches of greeniſh flowers.

[2]MENISPERMUM *Virginicum.*

*Virginian Lobated-leaved Moonſeed.*] Riſes with climbing ligneous ſtalks, twining round ſupport twelve or fifteen feet high; large peltated, cordate, lobated leaves; and looſe bunches of greeniſh flowers.

Both theſe climbers flower here in July, each ſeparate flower is of about twelve oval petals, four exterior, and eight interior ones; and are ſucceeded by ripe ſeeds in autumn.

Theſe plants are employed as climbers in the ſhrubbery to form a variety, placed to twine round the ſtems of trees, or any other ſupport, or their numerous ſtalks and branches will twine and interweave one among another, and aſſume a buſhy growth: it is, however, proper to allow them ſome ſupport, for in America, their native ſoil, they climb up trees to a conſiderable height; ſo that here they are proper furniture for wilderneſs quarters to climb among trees and buſhes.

Their propagation is either by layers in autumn, which will be well rooted in one year; or, as they ſpread exceedingly in root, ſending up many ſhoots, which being ſeparated in autumn, each with roots to it, they will form proper plants.

They may alſo be raiſed from ſeeds, ſowed in ſpring in the open ground, half an inch deep; they will riſe the ſame year, managing them as other hardy ſeedlings.

MESEMBRYANTHEMUM, (*Ficoides*) Fig-Marigold.

This genus compriſes a numerous tribe of ſucculent, curious, floriferous exotics, of Africa, for the green-houſe collection, &c. conſiſting of one or two annuals, and many perennials; all of them with very ſucculent ſtalks and branches, ſome trailing and herbaceous, others erect and ſhrubby, and ſome acaulis; garniſhed with thick ſucculent leaves, of various ſingular forms in different ſpecies; and monopetalous multipartite flowers.

Claſs and order, *Icoſandria Pentagynia.*

*Characters.*] CALIX, is monophyllous, acutely five-parted and permanent. COROLLA, is monopetalous, and deeply divided into many narrow ſpear-ſhaped ſegments in ſeveral ſeries. STAMINA, twenty or more filaments, and capillary antheræ. PISTILLUM, an obtuſe five-cornered germen under the corolla; and moſtly five, but ſometimes ten or more ſtyles, with ſimple ſtigmas. PERICARPIUM, a roundiſh fleſhy capſule, having as many cells as there are ſtyles, with numerous roundiſh ſeeds.

There are between forty and fifty different ſpecies; all African plants from the Cape of Good-hope; near forty of which are retained in our gardens for variety, one of which is annual (Ice Plant); all the reſt are perennial for the green-houſe collection; and all the ſorts are of the ſucculent tribe, both in ſtalk and leaves, ſome with trailing ſtems, ſome

with ſhrubby firm ſtems, others looſe and pendulous, and ſome acaulis; and their leaves being moſtly thick and fleſhy, are of many different ſhapes, &c. in different ſpecies; ſome long and round like a cylinder, others three-ſquare, ſome taper, ſome tongue-ſhaped, ſcymetar-ſhaped, &c. ſome oppoſite and connate, or connected at the baſe, and ſome diſtinct; many are papuloſe, or pimply, others punctated, or dotted; ſome impunctated, or intirely ſpotleſs, or ſmooth, &c. all as in their following deſcriptions.

*Annual Sort.*

[1]MESSEMBRYANTHEMUM *Cryſtallinum.*

*Cryſtalline Meſembryanthemum, commonly called Diamond Ficoides, or Ice-Plant.*] Riſes with a ſhort, thick, ſucculent ſtalk, dividing low into many trailing, very ſpreading, ſucculent branches, beſpangled all over with icey pimples, very pellucid and glittering; oval, undulate, alternate, papuloſe or pimply, glittering leaves; and from the ſides of the branches numerous, almoſt cloſe-ſitting, white flowers, tinged with red or crimſon; ſucceeded by plenty of ſeed in autumn.

This ſingular and curious plant being cloſely covered with large pellucid pimples, full of moiſture, ſhining brilliantly like diamonds or bubbles of ice; whence it derives the name, as above; it is in great eſteem by the curious for its ſingularity, and highly merits a place amongſt the tender annuals of the pleaſure-garden.

*Perennial Sorts, all for the Green-Houſe.*

[2]MESEMBRYANTHEMUM *Geniculiflorum.*

*Jointed flowered Meſembryanthemum.*] Hath a ſhrubby ſucculent ſtalk; half-taper, papuloſe or pimply, diſtinct leaves; and white flowers, ſitting cloſe to the axillas, having quadrifid cups.

[3]MESEMBRYANTHEMUM *Noctiflorum.*

*Noctiflorous, or Night-flowering Meſembryanthemum.*] Hath a thick, ſhrubby, ſucculent ſtalk; half-cylindric, ſmooth, diſtinct leaves; and purple and white flowers on foot-ſtalks, having quadrifid cups; the flowers opening on nights.

[4]MESEMBRYANTHEMUM *Splendens.*

*Splendent, or Shining Meſembryanthemum*] Hath a ſhrubby, firm, ſucculent ſtalk and branches; ſemi taper, recurved, unſpotted, ſmooth, ſhining leaves, growing diſtinct in cluſters; and whitiſh flowers, having the cups terminating in digitate points.

[5]MESEMBRYANTHEMUM *Umbellatum.*

*Umbellated Meſembryanthemum.*] Hath a ſhrubby, firm, ſucculent ſtalk; awl-ſhaped, rough-ſpotted leaves, connate at the baſe, but ſpreading at top; and white flowers in a corymbus reſembling an umbel.

[6]MESEMBRYANTHEMUM *Calamiforme.*

*Calamiforme, or Quill-leaved Meſembryanthemum.*] Is acaulis, or without ſtalk; almoſt taper, impunctated or ſpotleſs, aſcending leaves, connate at the baſe; and octagynous, or eight-ſtyled, white flowers.

[7]MESEMBRYANTHEMUM *Bellidiflorum.*

*Daiſy-flowered Meſembryanthemum*] Is acaulis, or without ſtalk; narrow, three-cornered, ſpotleſs leaves, having the top indented into three parts; and ſmall purpliſh flowers.

[8]MESEMBRYANTHEMUM *Deltoides.*

*Deltoide-leaved Meſembryanthemum.*] Hath a ſhrubby, ſucculent ſtalk; deltoide-ſhaped, triangular, ſhort, thick, indented, ſpotleſs, diſtinct leaves; and pale-purple, fragrant flowers, ſingly.

[9]MESEMBRYANTHEMUM *Barbatum.*

*Bearded Star-pointed Meſembryanthemum.*] Hath a ſhrubby, firm, ſucculent ſtalk and branches; ſub-oval, papuloſe, or pimply leaves, diſtinct, bearded at the point in a radiated manner; and purple flowers.

[10]MESEMBRYANTHEMUM *Hiſpidum.*

*Hiſpid, or Briſtly Meſembryanthemum.*] Hath a ſhrubby, firm, ſucculent, hiſpid, downy ſtalk; cylindrical, papuloſe, diſtinct leaves; and pale-purple flowers.

*Varieties.*] With violet-coloured flowers——with orange coloured flowers——red flowers.

[11]MESEMBRYANTHEMUM *Villoſum.*

*Villoſe, or Hairy Meſembryanthemum.*] Hath a ſhrubby, firm, ſucculent, hairy ſtalk; narrow, ſemi-taper, channelled, downy, ſpotleſs leaves, connate at the baſe.

[12]MESEMBRYANTHEMUM *Scabrum.*

*Rough-leaved Meſembryanthemum.*] Hath a ſhrubby, ſucculent ſtalk; awl-ſhaped, diſtinct leaves, having all the under-ſide very rough and prickly; and violet-coloured flowers, with chaffy cups.

[13]MESEMBRYANTHEMUM *Emarginatum.*

*Emarginated Meſembryanthemum.*] Hath a ſhrubby, ſucculent ſtalk; awl-ſhaped, roughiſh leaves, in cluſters; and purple flowers, having the petals emarginated, and with ſpinous cups.

[14]MES-

[14]MESEMBRYANTHEMUM *Uncinatum.*

*Uncinated Meſembryanthemum, or Buck's-horn Ficoides* ] Hath a ſhrubby, jointed, ſucculent ſtalk; having the joints terminated by triangular, acute-pointed, connate leaves, indented underneath; and purple flowers.

[15]MESEMBRYANTHEMUM *Spinoſum.*

*Spinous, or Prickly Meſembryanthemum.*] Hath a ſhrubby, ſucculent ſtalk and branches, armed with branching ſpines; taper, three-ſquare, punctated, diſtinct leaves; and reddiſh-purple flowers.

[16]MESEMBRYANTHEMUM *Tuberoſum.*

*Tuberous rooted Meſembryanthemum.*] Hath a headed, tuberous root; ſhrubby, firm, ſucculent ſtalks; awl-ſhaped, bliſtered or pimply, diſtinct leaves, patulent or ſpreading at top; and purple flowers.

[17]MESEMBRYANTHEMUM *Stipulaceum.*

*Stipulaceous Meſembryanthemum.*] Hath a ſhrubby, firm, ſucculent ſtem; ſub-triquetrous, compreſſed, punctated, diſtinct leaves, in cluſters, having the baſe bordered; and purple flowers, nearly in a corymbus.

[18]MESEMBRYANTHEMUM *Craſſifolium.*

*Craſſifoliate, or thick-leaved Meſembryanthemum.*] Hath a nearly cylindrical, looſe, creeping ſtem; ſemi-cylindrical, thick, ſmooth, connated leaves, triquetrous at the top; and purple flowers.

[19]MESEMBRYANTHEMUM *Falcatum.*

*Falcated-leaved Meſembryanthemum.*] Hath a ſhrubby, firm, ſucculent ſtem; ſub-ſcymitar ſhaped, incurved, punctated, diſtinct leaves; and purple flowers.

[20]MESEMBRYANTHEMUM, *Glomeratum.*

*Glomerated Meſembryanthemum.*] Hath a ſhrubby, ſucculent, diffuſe, paniculated ſtalk; taper, trigonal, compreſſed, incurved, punctated leaves; and numerous purple flowers in conglomerated panicles.

[21]MESEMBRYANTHEMUM *Loreum.*

*Loreated Meſembryanthemum.*] Hath a looſe, pendulous, ſucculent ſtalk; ſemi-cylindrical, long, recurved, connate leaves, in cluſters, having the interior part of the baſe gibbous; and reddiſh purple flowers.

[22]MESEMBRYANTHEMUM *Filamentoſum.*

*Filamentoſe Meſembryanthemum.*] Hath a pendulous, looſe, ſucculent ſtem, dividing into hexagonal branches; triquetrous, ſlightly-punctated leaves, almoſt connate at their baſe, with rough angles; and ſmall-petaled, obſolete-purple flowers.

[23]MESEMBRYANTHEMUM *Acinaciforme.*

*Scymitar-leaved Meſembryanthemum.*] Hath a looſe, procumbent ſtalk; ſcymitar ſhaped, ſpotleſs, connated leaves, having angular rough keels; and purple flowers, with ſpear-ſhaped petals.

[24]MESEMBRYANTHEMUM *Micans.*

*Glittering Meſembryanthemum.*] Hath a ſhrubby, firm, ſucculent, rough ſtem; ſub-cylindrical, pimply, ſilvery, glittering, diſtinct leaves; and orange coloured flowers.

[25]MESEMBRYANTHEMUM *Roſtratum.*

*Roſtrated, or Heron's bill Meſembryanthemum.*] Is acaulis, or without ſtalks; ſemi-cylindric, connated leaves, having the outſide ſet with tubercles; and yellow flowers.

[26]MESEMBRYANTHEMUM *Corniculatum.*

*Corniculated, or Horned Meſembryanthemum.*] Hath a looſe, creeping, ſucculent ſtalk; triquetrous ſemi-cylindric, horned, rough punctated, connate leaves; and yellow and orange-coloured flowers, with ten ſtyles.

[27]MESEMBRYANTHEMUM *Bicolorum.*

*Bicolor, or Two-coloured Meſembryanthemum.*] Hath a ſhrubby, firm, ſucculent ſtem; awl-ſhaped, ſmooth, punctated, diſtinct leaves; and two-coloured flowers, *i. e.* purple without and yellow within.

[28]MESEMBRYANTHEMUM *Glaucum.*

*Glaucous, or Grey-leaved Meſembrianthemum.*] Hath an erect, ſhrubby, ſucculent ſtem; three-ſquare, acute, punctated, diſtinct leaves; and yellow flowers, having the calycinal ſolioles oval-cordate-ſhaped.

[29]MESEMBRYANTHEMUM *Ringens.*

*Ringent Meſembryanthemum, or Dog's chap Ficoides.*] Is ſub-acaulis, or almoſt without ſtalk; thick, three-cornered, ciliate, indented, dotted leaves; and yellow flowers.

*Variety.*] Cat's-chap *Meſembryanthemum.*

[30]MESEMBRIANTHEMUM *Difforme.*

*Deformed-leaved Meſembryanthemum.* Is acaulis; having thick, deformed, dotted, connated leaves; and yellow flowers.

[31]MESEMBRYANTHEMUM *Dolabriforme.*

*Axe-leaved Meſembryanthemum.*] Hath low, procumbent, ſucculent ſtalks; axe-ſhaped, punctated leaves; and yellow flowers, opening on nights.

[32]MESEMBRYANTHEMUM *Expanſum.*

*Expanded Meſembryanthemum.*] Hath low, looſe, procumbent, ſucculent ſtalks; ſpear-ſhaped, plane, expanded, impunctated, or unſpotted, diſtinct leaves, oppoſite and alter-

nate, at a diſtance; and yellow flowers, white within.

[33]MESEMBRYANTHEMUM *Linguiforme.*

*Tongue-leaved Meſembryanthemum.*] Is acaulis, or without ſtalk; tongue-ſhaped, tall, impunctated, ſmooth leaves, having very thick margins; and large yellow flowers, with ten ſtyles.

*Varieties.*] With broad leaves—with narrow leaves—long-leaved.

[34]MESEMBRYANTHEMUM *Veruculatum.*

*Veruculiforme-leaved Meſembryanthemum.*] Hath a ſhrubby, firm, ſucculent ſtalk, three-ſquare-cylindric, bowed, acute, unſpotted, pellucid, diſtinct leaves, connate at the baſe; and yellow flowers in cluſters.

[35]MESEMBRYANTAEMUM *Tortuoſum.*

*Tortuoſe Olive-leaved Meſembryanthemum*] Hath a low, looſe, procumbent, ſucculent ſtalk; plane, oblong-oval, ſub-papilloſe, connate leaves, in cluſters; white flowers with ſaffron middles, having triphyllous two-horned cups.

[36]MESEMBRYANTHEMUM *Albidum.*

*White-leaved Meſembryanthemum*] Is acaulis, having three-ſquare, thick, firm, entire leaves, of a whitiſh colour; and large golden-yellow flowers.

[37]MESEMBRYANTHEMUM *Pugioniforme.*

*Dagger-leaved Meſembryanthemum.*] Hath a ſhrubby, ſucculent ſtalk; awl-ſhaped, triquetrous, very long, ſpotleſs, alternate leaves; and large, golden-yellow flowers, with ten ſtyles.

All theſe thirty-ſeven ſpecies of *Meſembryanthemum*, being natives of Africa, in this country they require ſhelter of a green-houſe, &c. in winter; they are all ſucculent in ſtalk, branch, and leaves, as before ſuggeſted. The firſt of which is an annual of great ſingularity; all the others are perennial, and moſtly durable in ſtem and foliage; thoſe deſcribed ſhrubby, riſe with firm ſtems of different heights, often branchy; the others deſcribed pendulous, have looſe ſtraggling ſtems and branches, inclining to the ground; and the acaulis ſorts have no ſtalks at all: their leaves are univerſally very thick, ſucculent, fleſhy, and of ſo many various ſhapes, ſituations, directions, and many of them curiouſly punctured, or dotted, with tranſparent points; others papilloſe, or covered with pellucid pimples, as in each reſpective deſcription, that, together they exhibit a ſingularly agreeable variety at all times of the year, and merit a place in every curious green-houſe collection. They are alſo very ornamental in their flowers, which in different ſorts appear at different ſeaſons of the year, as in ſpring, ſummer, autumn, and winter, and many of the ſorts ſo floriferous as to appear covered with their flowers.

The flowers of all the ſpecies are univerſally monopetalous, but each is multifid or finely divided almoſt to the bottom, into numerous narrow ſegments, in ſeveral ſeries, all uniting at the baſe, appearing like ſome ſorts of marigolds, and which in their native ſoil, Africa, are ſucceeded by abundance of fruit, ſhaped ſomewhat like a fig, hence the name Fig-Marigold *(Ficoides)*.

The *Meſembryanthemum Cryſtallinum* is a very tender annual while young; is raiſed annually from ſeed in ſpring, by aid of hot-beds, until June, when it will endure the open air till October, and then periſhes; though if in autumn it is placed in a hot-houſe, it will often live all winter. It is commonly planted in pots, to move to different parts occaſionally; but if planted in the full ground, it grows conſiderably ſtronger, even to luxuriancy; it, however, when confined in pots, flowers the moſt abundantly.

All the perennial ſorts are of the temperature of green-houſe plants, ſo muſt be kept conſtantly in pots to move to that conſervatory in winter; though ſome of the ſhrubby kinds are hardy enough to ſucceed all winter under a garden-frame, and ſometimes in a warm border againſt a ſouth wall; it is, however, proper to allow the principal part the winter's ſhelter of a green-houſe.

As all the ſorts are of a ſucculent nature, always replete with moiſture, they ſhould be potted in a poor, light, dry earth; if ſandy, or of a rubbiſhy nature the better; however, any common light ſandy earth, free from dung, is proper, or a compoſt of light dry materials. See COMPOST.

They require ſhelter from October till May or June, muſt have but little water in winter, but frequent in ſummer, when in the open air in dry weather.

*Propagation and general Culture.*

Their propagation is, the firſt ſort by ſeed annually in ſpring in a hot-bed; and all the others by cuttings of their ſtalks or branches, in ſummer in the common ground; though their rooting may be facilitated by aid of artificial heat: obſerve the following directions for each ſort.

Firſt Species.—This ſort is raiſed annually from ſeed ſowed in March or beginning of April, in a hot-bed under frame and glaſſes, as directed for the *Amarantus Tricolor*, *Celoſia Criſtata*, or Cock's-Comb, Globe Amaranthus,

ranthus, and other tender annuals, as one bed may raiſe the whole; obſerving to mould the hot-bed with fine rich light earth, that is perfectly dry, ſix inches thick; the ſeed may then be ſowed in the earth of the bed in very ſhallow drills, covering it ſcarcely a quarter of an inch deep; or may be ſowed in pots of fine mould, the ſame depth, plunging the pots in the earth of the hot-bed; the plants will ſoon riſe, but they come up very weak, and advance very ſlowly at firſt, as well as being exceedingly tender, and impatient of cold and moiſture in their infant growth; indulge them, however, with freſh air daily at all opportunities, as directed in the culture of the above named annuals; likewiſe allow them water occaſionally, but uſe great caution in this, and always apply it as moderate and light as poſſible. When the plants are an inch or two high, prick out ſome of the ſtrongeſt, either in the ſame hot-bed, or in a freſh one, three inches apart, or in ſmall pots ſingly, giving very light waterings, and ſhade from the mid-day ſun, till freſh-rooted; here to remain a month, or thereabouts, continuing the admiſſion of air, as above, and ſupport the heat of the bed; and then if they are removed with balls into pots, and placed in a new hot-bed, it will forward them greatly; at which time thoſe intended to remain finally in pots, ſhould be planted in proper ſized ones (twenty-fours), to remain, which plunge in the hot-bed: let the whole remain in the bed under the frame and glaſſes. Continue the above management until the middle or latter end of June, then remove them to the full air; ſome to remain in the pots, others may be turned out with balls into the open borders, where they will grow freely, and ſpread their branches abundantly all around upon the ground, two or three feet every way.

As to future culture, thoſe in pots muſt be frequently watered in dry weather; but thoſe in the borders require no other care than to be kept clean of weeds, ſuffering their branches to ſpread about upon the ground.

To ſave good ſeed of this ſpecies, ſome of the potted plants ſhould, when in full bloom, be placed either in a frame to have occaſional ſhelter of the glaſſes in very wet weather and cold nights, whereby they will ripen ſeeds; or, if placed in a ſtove, or in a glaſs-caſe near the front, where they may have the free air, but defended as above, they will ripen ſeed more effectually; they, however, in fine dry warm autumns, will ſometimes ripen ſeed without the above precaution, but this is not to be depended on.

Perennial Sorts.—The propagation of all the perennial ſpecies, is effected by cuttings of the ſtalks and branches, any time from April till July; obſerving thoſe planted before the beginning of June ſhould generally be planted in pots, and plunged in a hot-bed, but thoſe in June or July, ſucceed in the open ground.

In chuſing the cuttings, obſerve to cut them off from about two or three to five or ſix inches long, according to the nature of the plants, and ſtrength of the ſhoots; obſerving to diveſt them of the lower leaves, if any, and then, previous to planting, lay the cuttings in a dry airy room, for ſome time, to heal over the wound, or cut part, as is neceſſary to all ſucculent cuttings; ſome will require to lie only three or four days, others of the moſt ſucculent nature, eight or ten; for the cut part muſt be healed, otherwiſe the moiſture iſſuing therefrom would be apt to rot the cuttings after being planted.

The cuttings being ready, then having a compoſt of light dry ſoil, either in pots or in the full ground, plant the cuttings therein, from about one inch to two or three deep, according to their length, cloſing the earth firmly about each, and directly give a little water; then thoſe in pots, if early in the year, may be plunged in a hot-bed, or in the bark-bed; but if in ſummer, may plunge them in a dry border; obſerving to allow all of them occaſional ſhade in ſunny days, from about ten until three or four o'clock, till they are rooted, eſpecially thoſe in the open air, by a covering of mats, giving ſprinklings of water in dry weather, once or twice a week; remarking that if heavy rains fall, it is proper to ſhield theſe kinds of cuttings from it as much as poſſible, but let them enjoy moderate ſhowers.

In ſix weeks, or a little more or leſs time, the cuttings will be rooted, and in a growing ſtate, when thoſe that were ſtruck in the full ground muſt be potted, thoſe already in pots, may remain in the ſame; and all of them in both caſes, placed in a ſheltered ſituation till October, then removed into the green-houſe; or a good garden-frame furniſhed with glaſſes for the winter.

As to their general culture, it is the ſame as for other ſucculents of ſimilar temperature; giving them ſhelter every winter, from October

tober until May, or beginning of June, and from thence to the end of ſummer place them in the open air: water them ſparingly in winter, but freely in ſummer in dry hot weather; and ſhift them annually into larger pots.

GREEN-HOUSE PLANTS.

MESPILUS, Medlar.

This genus conſiſts of deciduous fruit-trees and flowering ſhrubs, and a very ornamental ever-green; all hardy, of upright growth, and garniſhed with ſpear-ſhaped, and oblong-oval foliage, and quinquepetalous flowers; in ſome ſingly, but in the greater part in bunches, from the ſides and ends of the branches; ſucceeded by globular, baccaceous, eatable fruit, in ſome ſorts as large as moderate apples.

Claſs and order, *Icoſandria Pentandria.*

*Characters.*] CALIX, is monophyllous, divided into five concave, patent, permanent ſegments. COROLLA, five roundiſh concave petals, inſerted into the calix. STAMINA, twenty or more filaments inſerted into the calix, and ſimple antheræ. PISTILLUM, a roundiſh germen below the corolla, five erect ſtyles, and capitated ſtigmas. PERICARPIUM, a globular, umbilicated bacca, crowned by the connivent calix, and contains five gibbous, ſtoney ſeeds.

In this genus old botaniſts arranged the hawthorn, cockſpur-haw, azarole, and ſome other ſpecies, now of the genus *Cratægus*, &c. whoſe flowers are alſo icoſandrous, but have only two ſtyles, whereas in all the proper ſpecies of *Meſpilus*, now under conſideration, the flowers have five ſtyles, which is an obvious generic diſtinction between theſe two genera.

The real ſpecies, therefore, of this genus, are the following ſeven, ſix deciduous, and one ever-green, all of the tree and ſhrub kind.

*Deciduous Kinds.*

The firſt of theſe (common Medlar) is conſidered principally as a fruit-tree, alſo ſometimes for variety; the others chiefly as flowering ſhrubs for ornament.

[1]MESPILUS *Germanica.*

*German Meſpilus, or Common Medlar.*] Riſes with a deformed tree-ſtem, branching irregularly fifteen or twenty feet high; ſpear-ſhaped leaves, downy underneath; and large cloſe-ſitting, white flowers, ſingly from the ſides of the branches; ſucceeded by large roundiſh brown fruit, the ſize of middling apples, ripen in October, but not eatable till beginning to decay.

*Varieties.*] Common great German Medlar—ſmaller Nottingham Medlar—pear-ſhaped Italian Medlar.

This ſpecies and varieties are all cultivated in the Engliſh gardens for the fruit, but the German or Dutch Medlar, and the Nottingham kind, are the moſt common; and the latter of which two, though a ſmaller fruit, is rather preferable for richneſs and poignancy of flavour. Remarking of all theſe kinds of fruit, that they are never eatable until they begin to rot; for when firm and ſound, are of a ſingularly auſtere diſagreeable taſte, yet having lain ſome time after being gathered, till they begin to aſſume a ſtate of decay, and become ſoft, they acquire a delicious flavour, extremely agreeable to many, to others altogether unpalatable.

All the ſorts ripen in the latter end of October, or beginning of November, when being gathered, ſome ſhould be laid in moiſt bran, in ſeveral layers, to forward their decay, others on ſtraw in the fruitery; thoſe in the bran will begin to be ready for uſe in about a fortnight, and thoſe laid on ſtraw will come gradually forward in ſucceſſion.

[2]MESPILUS *Arbutifolia.*

*Arbutus-leaved Meſpilus.*] Meſpilus with a ſhrubby ſtem, branching erectly five or ſix feet high; lanceolate, crenated, alternate leaves, downy underneath; and from the ſides and ends of the branches, ſmall white flowers in cluſters; ſucceeded by ſmall, roundiſh, purple fruit, like haws.

[3]MESPILUS *Amelanchier.*

*Amelanchier, or Shrubby Medlar, with black fruit.*] Riſes with ſeveral ſhrubby, ſlender, hairy ſtems, branching moderately about four feet high, having purpliſh branches; oval, ſerrated leaves, downy underneath; and ſmall white flowers, in cluſters at the ends of the branches; ſucceeded by ſmall black fruit.

[4]MESPILUS, *Chamæ-Meſpilus.*

*Chamæ-Meſpilus, or Dwarf Medlar, commonly called Baſtard Quince.*] Hath a ſhrubby, ſlender, ſmooth ſtem, branching weakly four or five feet high, having purpliſh branches; oval, ſerrated, ſmooth leaves, on long foot-ſtalks; and from the axillas, purple flowers, collected into round heads, with narrow, purpliſh, deciduous bracteæ; ſucceeded by ſmall red fruit.

[5]MES-

[5]MESPILUS *Cotoneaſter.*

*Cotoneaſter, commonly called Dwarf Quince.*] Riſes with a ſhrubby, ſmooth ſtem, branching four or five feet high, the branches ſlender and reddiſh; oval entire leaves, on ſhort foot-ſtalks; and from the axillas, ſmall, cloſe-ſitting, purple flowers, two or three together; ſucceeded by ſmall, roundiſh, bright-red fruit.

[6]MESPILUS *Canadenſis.*

*Canada Snowy Meſpilus.*] Hath a ſhrubby, ſmooth ſtem, branching four or five feet high, having ſmooth, purpliſh branches; oval-oblong, ſerrated, ſmooth leaves, on long foot-ſtalks; and all the branches terminated by cluſters of ſnowy-white flowers; ſucceeded by ſmall, purpliſh fruit, like haws.

*Ever-green Kind.*

[7]MESPILUS *Pyracantha.*

*Pyracantha, or Ever-green Thorn*] Riſes with a ſhrubby, ſpinous ſtem, branching diffuſely twelve or fourteen feet high, the branches ſlender and flexible, with a dark-greeniſh bark, armed with long ſharp ſpines; ſpear-ſhaped-oval, crenated, ever-green leaves; and all the ſhoots terminated by numerous cluſters of whitiſh flowers; ſucceeded by large bunches of beautiful red berries, remaining all winter, and exhibiting a very ornamental appearance.

All theſe ſeven ſpecies of *Meſpilus* are of the tree and ſhrub kind; the firſt ſix ſorts are deciduous, the ſeventh an ever-green, the leaves univerſally ſimple; thoſe of the *Meſpilus Germanica* very large; the others moſtly of moderate ſize; and which in moſt of the ſorts grows upon ſhort foot-ſtalks. They all flower abundantly every ſummer, the flowers univerſally hermaphrodite, and conſiſt each of five large, roundiſh petals, twenty ſtamina, and five ſtyles; and all ſucceeded here by plenty of fruit of the berry kind; ſee the *Characters*. The fruit of ſome is as large as middling apples, as before obſerved, as in the common Medlars; others ſcarcely the ſize of haws.

They are all very hardy, and ſucceeed in any common ſoil and ſituation, and their propagation and culture is very eaſy.

With reſpect to their uſe in gardens, the firſt ſort and varieties is cultivated as a fruit-tree, principally as ſtandards, ſometimes alſo as eſpaliers for variety; and are alſo often introduced into the ſhrubbery plantation to diverſify the collection; all the other ſix ſpecies are very proper furniture for any ornamental plantation, where they will effect variety very agreeably with their different foliage; and their flowers make a fine appearance, as alſo their fruit in autumn and winter, which, if not devoured by birds, remain long on the branches, and afford a fine variety in thoſe ſeaſons; obſerving to diſpoſe the deciduous kinds in aſſemblage, principally with others of that tribe; and the ever-green ſort alſo chiefly with thoſe of its own nature; arranging each ſort according to its gradation of height; but as the *Pyracantha* being remarkably ornamental, both as an ever green, and ſingularly beautiful in its numerous cluſters of fine red berries, covering the branches in winter, it in particular ſhould have a conſpicuous ſituation; this ſort, however, being rather of flexible growth, is moſt commonly trained againſt walls or the fronts of houſes, both for the ſupport of its flexible branches, and that it may exhibit its berries more ornamentally; it, however, may alſo be trained as a ſtandard, like the other ſorts, in the open ſhrubbery, and all of them ſuffered to branch out into ſpreading heads.

When it is deſigned to have any of the common Medlars as fruit-trees, they may be trained either as dwarfs, for dwarf ſtandards, or for eſpaliers, or trained as half or full ſtandards; and managed in either of theſe modes of training nearly as other fruit-trees, particularly the apple and pear; and are raiſed either by ſeed, by graſting, or by budding, but either of the two latter methods are the moſt certain for continuing the ſorts without variation; obſerving after ſhortening their firſt ſhoots from the graft or bud, where it ſhall ſeem neceſſary, to force out a proper ſupply of wood to form a head; train the branches afterwards principally at full length, and let the ſtandards branch out in their own way.

*Propagation and Culture.*

All the ſorts are eaſily raiſed from ſeeds, layers, and by graſting and budding.

By Seed—By this method all the ſorts may be propagated plentifully in the common ground; obſerving, however, that it is moſt eligible to raiſe the *Medlars* principally by graſting or budding, to continue the ſorts; but in reſpect to ſowing the ſeed, this ſhould generally be ſowed in autumn, in a bed of common earth: they uſually lie a year, or more, before they germinate, that is, like haws and holly-berries, &c. they rarely come up before the ſecond ſpring; when water them frequently in dry weather; and in autumn

tumn or ſpring following, the largeſt ſeedlings may be thinned out and planted in nurſery-rows, two feet by one aſunder; and in another year plant out all the reſt in the ſame manner; and in three or four years, they will be proper for the garden or ſhrubbery.

By Layers —In autumn, or any time from that ſeaſon until February or March, lay the young branches by the common method, they will be properly rooted by autumn following, when tranſplant them in nurſery-rows like the ſeedlings.

By Grafting and Budding.—Either of theſe methods ſhould generally be practiſed for raiſing the common Medlars, for they are apt to vary from ſeed; but all the other ſorts may alſo be readily propagated by the ſame methods; obſerving, that the ſtocks generally uſed on which to work moſt of the ſorts is the *White Thorn, i. e. Cratægus Oxyacantha*, raiſed from ſeed, as directed under that article; but the pear-ſtock is rather to be preferred for the common Medlars, when intended for fruit-trees; and the work of grafting and budding them is in the uſual way, low in the ſtock to form dwarfs; and for half, or full ſtandards, it may alſo either be performed low in the ſtock, and train the firſt-ſhoot for a ſtem, or let the ſtock form a ſtem, and work them at from about three or four to five or ſix feet height. See GRAFTING and INOCULATION.

Obſerve that thoſe intended for fruit-trees, whether dwarfs, or half or full ſtandards, they, with reſpect to training, ſhould, for dwarfs, have the firſt ſhoots from the graft or bud headed down ſhort in ſpring, if neceſſary, to force out a proper ſupply of bottom-branches, which train as for other dwarf fruit-trees, either for ſtandard-dwarfs or eſpaliers; or if for half or full ſtandards, that if worked low in the ſtock, train the firſt ſhoot of each for a ſtem, then top it at the proper height, to force out laterals to form the head; but if worked high in the ſtock, the firſt ſhoots may either be ſhortened or ſuffered to grow as it ſhall ſeem proper, according to the natural diſpoſition of the leading ſhoot, with reſpect to its furniſhing lateral branches; remarking, after this training the firſt year or two, to give the tree its firſt proper formation, you are to deſiſt from any general ſhortening of the branches, practiſing it only occaſionally to particular ſhoots to procure more wood, if neceſſary, to fill any vacancy, or to reduce any irregular growth, or to cut off dead parts; but otherwiſe train the branches principally at full length, and let the ſtandards aſſume nearly their own natural way of branching. See DWARF-TREES, ESPALIERS, and STANDARD-TREES, &c.

MIMOSA, Senſitive Plant, &c.

This genus compriſes ſhrubby and herbaceous plants, but moſtly of the ſhrub kind, ſome trailing, others erect, all natives of the Indies, &c. retained here in ſtoves as great curioſities, particularly for the very ſingular ſenſibility of the leaves of ſome ſorts, which on being touched, ſuddenly recede, contract and fall down in a very wonderful manner: all of them garniſhed with pinnated leaves, and monopetalous, funnel-ſhaped, five-parted, polygamous flowers at the axillas and ends of the branches in cluſters and ſpikes.

Claſs and order, *Polygamia Monœcia.*

*Characters.*] CALIX, is monophyllous, ſmall, and quinquedented. COROLLA, is monopetalous, funnel-ſhaped, and five-parted at the brim. STAMINA, many long capillary filaments, and incumbent antheræ. PISTILLUM, an oblong germen, ſhort filiforme ſtyle, and truncated ſtigma. PERICARPIUM, a long pod, having tranſverſe partitions, containing many roundiſh ſeeds.

The name *Mimoſa*, of this genus, ſignifies mimick, originating from the ſenſibility of the leaves, which by their motion mimick, or imitate, as it were, the motions of animals.

To this genus Linnæus joins many of the *Acacias*, and it compriſes upwards of forty different ſpecies; though not more than a quarter of them are common in the Engliſh gardens; or that poſſeſs any particular merit either for curioſity or ornament, and none for uſe. Of the ſorts cultivated here in our ſtoves, &c. ſome are of the ſhrub and tree kind, and two or three are herbaceous perennials and annuals; are moſtly of the ſenſitive kinds, except the *Acacia* ſorts, which are motionleſs, as expreſſed under their proper heads, i. e. ſenſitive and humble kinds, and ſenſeleſs kinds. The former of which are exceedingly curious plants in the very ſingular circumſtance of their leaves receding rapidly from the touch; for the leaves being winged, each compoſed of numerous ſmall lobes, all of which on being touched, haſtily run up cloſe together; and in ſome ſorts the foot-ſtalks and all is affected, ſo as inſtantly to fall downward, as if faſtened by hinges.

*Shrubby*

*Shrubby, Senſitive, and Humble Kinds.*

They have all winged leaves, each wing of many ſmall pinnæ; ſome only contract the lobes of the leaves and pinnæ at the touch; others not only contract every part of their leaves, but which, together with their foot-ſtalks, ſuddenly drop downward; and for diſtinction ſake, the former are called Senſitive *Mimoſas*, and the latter Humble Senſitives; but the leaves of both ſorts ſoon recover their uſual poſition.

[1]MIMOSA *Senſitiva.*

*Common Senſitive Humble Plant.*] Riſes with an under-ſhrubby prickly ſtem, branching ſix or eight feet high, armed with crooked ſpines; conjugated, pinnated leaves, with bijugated partial lobes, or wings, having the inner ones the leaſt, each leaf on a long foot-ſtalk; and at the ſides and ends of the branches many purple flowers in roundiſh heads; ſucceeded by broad, flat, jointed pods, in radiated cluſters.

This is ſomewhat of the humble-ſenſitive kind; the leaves, foot-ſtalks and all, recede from the touch, though not with ſuch facility as in ſome of the following ſorts.

[2]MIMOSA *Pudica.*

*Baſhful Humble Plant.*] Riſes with an under-ſhrubby, declinated, prickly ſtem, branching two or three feet around, armed with hairy ſpines; pinnated, digitated leaves, each leaf being of five or more long folioles, attached by their baſe to a long foot-ſtalk, and ſpread out above like the fingers of a hand; and at the ſides and ends of the branches roundiſh heads of greeniſh white flowers; ſucceeded by ſmall, jointed, prickly pods.

This is truly of the humble ſenſitive kind, for by the leaſt touch the leaves inſtantly recede, contract cloſe, and, together with the foot-ſtalk, quickly decline downward, as if aſhamed at the approach of the hand.

[3]MIMOSA *Pernambucana.*

*Pernambuca Slothful Mimoſa.*] Hath under-ſhrubby, procumbent, unarmed ſtems, branching two or three feet around; bipinnated leaves, of three or four pair of ſhort, winged foliola; and at the axillas drooping ſpikes of pentandrous flowers, the lower ones caſtrated.

This ſort receding very ſlowly from the touch, only contracting its pinnæ a little when ſmartly touched; hence the name Slothful Mimoſa.

[4]MIMOSA *Aſperata.*

*Rough Senſitive Mimoſa.*] Hath a ſhrubby, upright, prickly, hairy, rough ſtem, branching four or five feet high, armed with ſhort, broad, whitiſh ſpines; bipinnated, prickly leaves, of five or ſix pair of foliola, or wings, arranged oppoſite, having two thorns between each pair; and at the upper axillas globular heads of purple flowers; ſucceeded by ſhort, flat, jointed pods, in cluſters, ſpreading each way like a radius.

This is only moderately ſenſitive in its foliola, but not in the foot-ſtalks.

[5]MIMOSA *Punctata.*

*Punctated Senſitive Mimoſa.*] Riſes with a ſhrubby, upright, taper, punctated or ſpotted, unarmed ſtem, branching erectly five or ſix feet high; bipinnated leaves, of four or five pair of long, winged folioles, having each about twenty pair of pinnæ; and at the axillas and termination of the branches oblong ſpikes of yellowiſh decandrous flowers, the inferior ones caſtrated; ſucceeded above by oblong ſeed-pods.

This ſort, though naturally ſhrubby and perennial in its native ſoil, yet in this country it ſometimes decays in winter.

It is only ſenſitive in the foliola, but quick in the motion.

*Herbaceous Senſitive and Humble Kinds.*

Of theſe ſorts two are perennial of the trailing kind; and one is annual, of ſomewhat erect growth; have all winged leaves, with the wings formed of many ſmall pinnæ.

[6]MIMOSA *Viva.*—(*Perennial.*)

*Lively Senſitive Mimoſa.*] Hath herbaceous, trailing, unarmed, repent ſtems, very branchy, ſpreading widely around, rooting at the joints as they advance; conjugated pinnated leaves, with quadrijugated, roundiſh, partial lobes, or wings; and at the axillas globular heads of yellowiſh flowers; ſucceeded by ſhort, flat, jointed pods.

This ſpecies is only ſenſitive in the foliola, but is the moſt lively of that kind, it being ſo ſuſceptible that all the foliola recede rapidly from the leaſt touch, whereby it has the diſtinctive appellation of vivacious, or lively *Mimoſa.*

[7]MIMOSA *Quadrivalvis.*—(*Perennial.*)

*Quadrivalve Humble Mimoſa.*] Hath herbaceous, ſlender, quadrangular, prickly ſtems, branching and ſpreading all around, armed with recurved ſpines; bipinnated leaves of

two or three pair of winged lobes, having each many pinnæ; and at the axillas globular heads of purple flowers, ſucceeded by quadrivalvular pods.

This is of the humble ſenſitive kind, both leaves and foot-ſtalks recede from the touch.

[8]MIMOSA *Plena—(Annual).*

*Double-flowered Senſitive annual Mimoſa.*] Riſes with an herbaceous, erect, round, unarmed ſtem, cloſely branching and ſpreading every way, three or four feet high; bipinnated leaves of four or five pair of winged lobes, of many pairs of pinnæ; and at the axillas and termination of the branches ſpikes of yellow pentandrous flowers, the lower ones double; ſucceeded by ſhort, broad pods.

This annual is only ſenſitive in the foliola, but extremely ſuſceptible of the touch or air.

*Shrubby Inſenſible Kinds.*

Theſe are of the *Acacia* kind, formerly a diſtinct genus, but now all ſpecies of *Mimoſa*; but their leaves are deſtitute of motion or ſenſibility at the touch; there are about three noted ſpecies in the Engliſh gardens, all for the ſtove.

[9]MIMOSA *Cornigera.*

*Horned Mexican Mimoſa, commonly called Great Horned Acacia.*] Hath a ſhrubby, upright, deformed ſtem, branching irrregularly, armed with very large, horned-like, white ſpines, by pairs, connated at the baſe; bipinnated leaves thinly placed; and flowers growing in ſpikes.

This ſpecies is eſteemed a curioſity for the oddity of its large ſpines, reſembling the horns of animals, and which are often variouſly wreathed, twiſted, and contorted.

[10]MIMOSA *Farneſiana.*

*Farneſian Fragrant Acacia.*] Hath a ſhrubby ſtem, branching many feet high, armed with diſtinct ſpines; bipinnated leaves, having eight pair of partial lobes, or wings; and globular, cloſe-fitting ſpikes of yellow ſweet-ſcented flowers.

[11]MIMOSA *Nilotica.*

*Nilotic True Ægyptian Acacia.*] Hath an upright tree-ſtem, branching many feet high; armed with ſpreading ſpines; bipinnated leaves; and globular ſpikes of flowers, having foot-ſtalks. From the exſudation of the leaves of this ſort, is procured the drugs called *Succus Acaciæ* and Gum-arabic.

Theſe eleven ſpecies of *Mimoſa* are the moſt noted ſorts in the Engliſh gardens; all the ſhrubby kinds are durable in root, ſtem, and branches; thoſe of the perennial herbaceous kinds, are alſo often abiding; but the annual ſort always periſh root and branch at the approach of winter. They are all natives of the Indies, and in this country require the continual ſhelter of a hot-houſe, or of a hot-bed of ſimilar temperature under frames and glaſſes; though they can hardly be ſupported alive in winter unleſs placed in a ſtove; ſo all the ſorts muſt conſtantly be kept in pots, and placed principally in that department, eſpecially during the winter; nor will they ſucceed well in the open air in ſummer, except about a month during the greateſt heat; but the ſenſitive and humble kinds, if expoſed to the open air even in the hotteſt days will be deprived of their ſenſibility during the time they remain ſo expoſed, therefore ſhould always be kept under glaſſes, in a ſtove if poſſible; or in default of ſuch a convenience, the plants might be raiſed from ſeed in ſpring in any common hot-bed under frames, &c. as directed for tender annuals, and continued conſtantly under the glaſſes, and thereby will afford pleaſure all ſummer by the oddity of their ſenſitive foliage; however to have them to remain in perfection the year round, ſome muſt be continued always in a ſtove, as before obſerved, for the warmer they are kept, the ſtronger will be their ſenſible quality.

The ſenſitive and humble kinds in particular, frequently flower in this country, and produce ſeeds. The *Mimoſa Farneſiana* is alſo often very floriferous here, which are very fragrant; the flowers of all are, ſeparately, but ſmall, but generally grow in bunches; each flower is monopetalous and funnel-ſhaped, with many ſtamina. See the *Characters.*

The ſenſitive and humble plants are in great eſtimation among the curious for the ſingular ſenſibility lodged in their leaves; which has two kinds of motion, the one occaſioned by the action of warm nouriſhing vapours; the other artificial, in conſequence of being touched or ſhaken; that with whatever body it is touched or irritated, either by the hand, a ſtick, or the leaſt wind blowing, the wings of the leaves ſuddenly cloſe, and the foot-ſtalks fall down; but they all ſoon recover their proper poſition, eſpecially in a warm ſtove.

It

It is remarkable, the ſenſibility of ſome reſide particularly in the articulation or joinings of the lobes of the leaves to the partial foot-ſtalks, as in the ſimple ſenſitives; in others both in the joinings of the lobes, and in the articulations of the mid-rib, to which they are attached, as alſo to the main or common foot ſtalk, as in the humble ſenſitive kind.

The motion of theſe plants is owing to a ſtrong contraction; each foot-ſtalk ſeems to to terminate with a kind of joint, on which the lobes and leaves turn in all directions with ſurpriſing facility, and the main foot-ſtalk ſeems attached to the branches by a joint, ſo as to turn up and down as by a hinge.

In the experiments of trying the ſenſibility of theſe plants, that in touching the upper leaves, if in contracting they fall and touch thoſe below them, thoſe will alſo all contract and fall, ſo that as one touch another they will continue falling one after another for a conſiderable time in a curious manner.

The time which the leaves, &c. require to recover themſelves, after falling by any touch or irritation, is according to the vigour of the plant, hour of the day, ſereneneſs of the atmoſphere, and temperature of the heat of the ſtove, &c. ſo are often from about ten or fifteen minutes to an hour or more, before they are fully reinſtated in their former proper poſitions.

It is remarkable that the plants each evening naturally contract themſelves, and expand again in the morning.

*Propagation and Culture of all the Sorts.*

The propagation of all the ſorts both ſenſitives and *Acacias*, is by ſeed in ſpring in a hot-bed, or in the bark-bed in the ſtove; and ſome of the ſenſitive kinds alſo by layers and cuttings.

By Seed.—It is ſold at the nurſeries and ſeed-ſhops. Sow it in pots of light rich mould, covering it with fine earth a quarter of an inch deep, and plunge the pots in the hot-bed, if in a common hot-bed under frames and glaſſes; manage them nearly as directed for tender annuals, ſuch as the *Amaranthus Tricolor*, and others of that quality; and if in a bark-bed in the ſtove, very little trouble is required: obſerving to give moderate ſprinklings of water, and when the plants are two or three inches high, prick them ſingly in ſmall pots, which plunge alſo in the hot-bed, &c. giving water and occaſional ſhade till rooted, repeating the waterings frequently, and continue the plants in the hot-bed under glaſſes, or plunged in the bark-bed of the ſtove, being both neceſſary to facilitate their growth, preſerve them in vigour, and encreaſe the ſenſibility of the ſenſitive kind; allowing air in common with the other plants in the bed. Remarking, that to preſerve the perennial ſorts, both ſhrubby and herbaceous, they muſt be kept in the ſtove all winter, and indeed principally the year round, when they will be of ſeveral years duration, flower in ſummer, and ripen ſeeds in autumn, particularly ſome of the ſenſitive kinds.

But in want of a ſtove, as before hinted, thoſe who are curious to have ſome ſenſitive plants, may nevertheleſs have the pleaſure of them in ſummer, by aid of a common dung hot-bed under frames and glaſſes, but not in winter; that is, raiſe ſome plants, either of the annual ſort or any of the other kinds, by ſeed in ſpring, in a hot-bed under a frame, &c. as above directed, keeping up the heat of the bed until the middle of June, and continue the plants always under the frame, tilting one end of the lights a little, occaſionally in warm days to admit freſh air; and as the plants riſe in height raiſe the frame at bottom, to allow them full room to grow; or about Midſummer, or ſoon after, ſome of the low ſpreading kinds may be turned out with balls, or plunged in their pots into a warm ſunny border, and covered with large hand-glaſſes, which may be lifted off occaſionally juſt to view the plants. By thoſe methods the plants may be preſerved through the ſummer in their ſenſitive quality, tho' not equal in perfection to thoſe in ſtoves; nor can they be preſerved alive in winter out of a ſtove.

By Layers.——Any of the ſhrubby kinds that afford ſpreading branches may be layed any time in ſummer, in pots plunged contiguous in the bark-bed, where they will readily take root, and be ready to pot off ſingly in autumn.

By Cuttings.——The ſenſitive and humble kinds often branch out profuſely, ſo as to furniſh plenty of young ſhoots in ſummer, of which take cuttings, plant them in pots, and plunge them in the bark-bed, they will readily take root and form proper plants.

But after all, ſeedlings generally form the beſt plants; however, any of the other two methods is eligible in default of ſeed.

With reſpect to the general culture of all the ſpecies, they muſt always be kept in pots; and to preſerve them all the year, muſt be placed in the ſtove, plunged chiefly in the

bark-bed, giving frequent watering both in ſummer and winter, but moſt in the ſummer ſeaſon; ſhifting them into larger pots as they encreaſe in growth: obſerving, that although moſt of the ſorts will live in the open air about a month or ſo in the heat of ſummer, it will be beſt to expoſe them but ſparingly, rather place them in an airy glaſs-caſe for a month or two in the ſummer, moving them to the ſtove again in due time.

MIRABILIS, Marvel of Peru, or Four-o'clock-flower.

This genus conſiſts of three large-growing buſhy, very floriferous perennials, from Peru in South America, admirably ornamental for the pleaſure-ground in ſummer, but which, although naturally perennial, often prove annual here: all of them, however, riſing with annual ſtalks, three or four feet high, branching widely all around; cloſely ornamented with large, oblong, entire leaves; and numerous, beautiful, monopetalous, funnel-ſhaped flowers, of beautiful colours.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX, is pentaphyllous, erect, ventricoſe, the leaves oval and perſiſtent. COROLLA, is monopetalous and funnel-ſhaped, having a long ſlender tube reſting on the nectarium; the limb or upper part erectly ſpreading, plaited, and obtuſely quinquifid, and with a globoſe nectarium under the corolla. STAMINA, five ſlender, unequal, inclinated filaments, and roundiſh antheræ. PISTILLUM, a roundiſh germen within the nectarium, ſlender ſtyle, and globular ſtigma. PERICARPIUM, none, the ſeed is an oval pentagonous nut.

There are but three ſpecies, all of which are natives of Peru, in the Spaniſh Weſt Indies, and in this country are tender, generally requiring to be forwarded in ſpring in a hot-bed until June.

The ſpecies are:

[1]MIRABILIS *Jalapa.*

*Jalap Mirabilis, or Common Marvel of Peru.*] Hath a large, thick, fleſhy root; an upright, thick, jointed ſtalk, dividing and branching numerouſly, widely, and erectly, a yard or more high; garniſhed with oblong, broad, oppoſite leaves; and all the branches and ſhoots terminated by numerous flowers in cluſters, of different colours in the varieties.

*Varieties.*] With white flowers—with yellow flowers—with purple flowers—with red flowers—with white and yellow flowers—white and purple flowers—purple and yellow flowers—red and yellow flowers.

Several other varieties often riſe from ſeed; and it is remarkable that although ſeveral of the above colours and variegations are ſometimes common to the ſame plant, yet it is rare that a plant of this ſpecies produce flowers of one of thoſe colours alone; ſometimes, however, the ſame plant will exhibit only white and purple flowers ſeparate, and ſometimes both colours in the ſame flowers, intermixed with the plain ones; the ſame is alſo obſervable in the red and yellow; others have plain flowers of ſeveral different colours; and ſometimes variegated flowers alſo on the ſame plant.

The root of this ſpecies was ſuppoſed to be the true officinal jalap, but which is ſince diſcovered to be the root of a ſpecies of *Convolvulus.*

[2]MIRABILIS *Longiflora.*

*Long-flowered Mirabilis.*] Hath a large, thick, fleſhy root; a thick ſtalk, dividing low into many declinated ſpreading branches, extending two or three feet every way; large, heart-formed, hairy, viſcous leaves, in oppoſite pairs; and all the branches and ſhoots terminated by white flowers in cluſters, having very long tubes, nodding downward.

[3]MIRABILIS *Dichotoma.*

*Dichotomous, or Forked Mirabilis.*] Hath a thick fleſhy root; an upright, thick, ſwollen, jointed ſtem, branching forkedly, two or three feet high; oblong oppoſite leaves; and ſmalliſh red flowers at the axillas, ſingly and cloſe-ſitting.

All theſe plants flower in July, continuing in plentiful ſucceſſion until October, very conſpicuous and elegant. Having the ſingularity of being ſhut all day, and expand towards the evening when the ſun declines; hence the inhabitants of the Indies, where they grow naturally, called them Four-o'clock-flowers: their time of opening here, however, depends on the weather, for if cloudy, or that the ſun is not very vehement, they often open great part of the day.

The flowers are univerſally hermaphrodite, and of one funnel-ſhaped tubular petal, having the lower part a long narrow tube, and the upper ſpreading. See the *Characters.*

Theſe plants are naturally perennial in root, which, however, if not preſerved here in winter, prove but of one year's duration, but if ſheltered from froſt and wet during the winter ſeaſon, they will remain alive, and

ſhoot

ſhoot out ſtrongly again in ſpring: in this country, however, the plants are commonly conſidered as annuals; becauſe they riſing from ſeed in the ſpring, and the ſame year produce flowers and perfect ſeed; and if left to nature in the open air, totally periſh in winter, at the firſt attack of froſt or exceſſive wet; but, as aforeſaid, if in autumn when the ſtalks begin to aſſume a ſtate of decay, the roots are taken up, and preſerved in ſand in a dry room all winter, and planted again in ſpring, they ſhoot out afreſh ſtronger than at firſt, and ſometimes obtain four or five feet ſtature, with very ſpreading heads; or if plants growing in pots, having the ſtems cut down in autumn, and the pots placed in a green-houſe, or garden-frames under glaſſes, the roots may alſo be preſerved ſound, and will ſhoot out again in ſpring as above.

The roots generally become large, tuberous and fleſhy, covered with a dark rind.

All the ſpecies are of a tender nature, ſcarcely able to endure the open air here fully day and night, until May or June; that is, they being raiſed from ſeed in ſpring, chiefly in hot-beds under glaſſes, continued and forwarded there until the beginning of June, then fully expoſed in the borders or pots, they become large branchy plants in July and Auguſt, and continue flowering until October or November, till prevented by the cold.

They are all elegant furniture for the principal compartments of the pleaſure-ground, they being both very ornamental in their large branchy growth, cloſely garniſhed with leaves, and by flowering ſo numerouſly ſeem as if entirely covered with flowers, in conſtant plentiful ſucceſſion from July till the beginning of winter, as aforeſaid.

The roots of all theſe plants is a ſtrong purgative, and given in a double quantity operate equal to the true jalap.

*Their Propagation and Culture.*

The propagation of all the ſpecies is by ſeed in the ſpring, either in a warm border, or in a hot-bed; but the latter will forward the plants to conſiderably the earlieſt and greateſt degree of perfection.

Firſt, by raiſing them in warm Borders.—Remark, we only recommend this in default of the convenience of hot-beds; and April is the proper ſeaſon for this mode of ſowing theſe ſorts: chuſe a warm ſouth border, open to the ſun; there ſow the ſeed in ſhallow drills, half an inch deep, and ſix inches aſunder: if the place is covered with hand-glaſſes, or with a frame and lights, or any other occaſional ſhelter on nights and cold weather, it will forward the germination of the ſeed, and growth of the young plants: in June they will be fit to tranſplant into the borders or in pots, chuſe moiſt weather, and give water and occaſional ſhade till rooted, they will then readily grow and acquire a tolerable ſize; but theſe will hardly attain a large ſize ſo ſoon, nor flower ſo early by a month or ſix weeks, as thoſe brought forward in a hot-bed.

By Hot-beds.—By ſowing and forwarding in hot-beds, under frames and glaſſes, is the only method by which we can obtain Marvel of Peru in due perfection in the proper ſeaſon: therefore in March prepare a hot-bed under frame and lights, as directed for tender annuals, ſuch as balſamine, &c. and earth it all over about ſix inches deep; ſow the ſeed in the earth of the bed, in ſhallow drills half an inch deep, as aforeſaid, or in pots of rich earth the ſame depth, plunging them in the earth of the bed. The plants will ſoon riſe; indulge them with freſh air daily, in common with other plants of the bed, by tilting the glaſſes, and give frequent refreſhments of water. When they are near two inches high, prick them into another freſh hot-bed to forward them, placing them either in the earth of the bed, four or five inches aſunder, or plant them ſingly in ſmall pots (thirty-twos), and plunge them in the bed: as ſoon as planted give water, and ſhade them from the mid-day ſun occaſionally till freſh-rooted, continuing the care of admitting freſh air every mild day; and towards the middle or latter end of May, when they have acquired ſome ſize and ſtrength, begin to inure them by degrees to the full air, ſo as by the firſt or ſecond week in June they may be removed into it fully, at which time chuſe mild cloudy weather, if ſhowery the better; take up thoſe growing in the bed, with balls of earth about their roots, and plant them in the borders; or if in pots, they may be readily turned out with the whole ball entire, and planted without their ever ſhrinking or feeling their removal; ſome may alſo be planted in large pots to remain in order for moving to ornament any particular compartment: obſerving to give water directly, and beſtow occaſional ſhade to ſuch as ſhall require it, together with a repetition of waterings to the whole, till they have ſtruck freſh root and begin to grow: after this they will not require any farther culture, except occaſional

ſional ſupport of ſtakes, which will be more particularly neceſſary in the *Mirabilis Longiflora*.

They will moſtly begin flowering in July, and will furniſh plenty of ripe ſeed in autumn for the purpoſe of propagation another year.

But as we before ſuggeſted, that if the roots are taken up in autumn, i. e. October, or early in November, dried, cleaned, and laid in dry ſand, in any dry room, ſecure from froſt and wet, they will remain ſound; and in ſpring, if planted in large pots, and in March or April plunged in a hot-bed under a deep frame, they will ſhoot out remarkably ſtrong, ſometimes four or five feet high, flower earlier by a month than ſeedlings of the ſame year.

Or ſuch of the plants as grow in pots, that having their ſtems cut down in October or November, may be placed in their ſaid pots in a green-houſe, near the windows, all winter, kept from wet, the roots will remain ſound, and in ſpring treat them as above.

MOMORDICA, Male Balſam Apple.

The plants are herbaceous trailers, of which there is a hardy perennial, cultivated both for variety and medical uſe, having long trailing ſtalks, garniſhed with broad ſimple leaves, and monopetalous monoecious flowers.

Claſs and order, *Monoecia Syngeneſia*.

*Characters.*] CALIX, male and female flowers apart on the ſame plant, having monophyllous, concave, five-parted cups, and thoſe of the females are placed on the germen. COROLLA, is monopetalous, large, rough, ſpreading, and adheres to the calix. STAMINA, three awl-ſhaped filaments in the males, with eared antheræ, two of them bifid, one ſingle. PISTILLUM, a large germen under the corolla, taper trifid ſtyle, and three oblong gibbous ſtigma. PERICARPIUM, an oblong-oval trilocular fruit, opening with elaſtic force, filled with many compreſſed ſeeds.

There are ſeveral annual ſpecies of but little merit; but the ſort commonly cultivated is the following perennial.

MOMORDICA *Elaterium*.

*Elaterium, or Wild Spurting Cucumbers.*] Hath thick, fleſhy, ſpreading roots; many trailing, angular, rough ſtalks, branchy and ſpreading two or three feet all around; garniſhed with large, angular, heart-formed, rough, grey leaves, on long rough ſoot ſtalks; and at the axillas ſmall, monoecious, yellow flowers; ſucceeded in the females by oval, cucumber-like, hiſpid fruit, that dart out their ſeeds with great velocity.

This ſpecies is one of the *Noli me tangere*, or Touch-me-not kinds, for upon handling the ripe fruit, it inſtantly burſts with elaſtic violence, and diſcharge its juice and ſeeds with amazing force all around to a great diſtance, often cauſing conſternation to ſtrangers who happen to touch them.

This plant is very hardy, and grows freely from ſeed in the common ground, and is of ſeveral years duration.

The fruit affords the officinal elaterium for medicine.

The propagation of this plant is by ſeed in autumn or ſpring, in a bed of common earth, ſowed either by broad-caſt and raked in, or in drills half an inch deep; and when the plants have leaves two inches broad, tranſplant them, thoſe intended for uſe in rows three or four feet aſunder; and may alſo diſperſe ſome in the pleaſure-ground for variety: give occaſional watering till freſh-rooted.

From the ſelf-ſowed or ſcattered ſeeds, many young plants often riſe ſpontaneouſly.

MONADELPHIA, the name of the ſixteenth claſs of the Linnæan ſyſtem, conſiſting of plants with hermaphrodite flowers, having all the ſtamina monadelphous or united into one body, with the ſtyle paſſing through them: examples of monadelphous plants are hollyhock, lavatera, marſh-mallow, &c. and conſiſts of five orders, ariſing from the number of ſtyles (five). See CLASSIS.

MONANDRIA, the name of the firſt claſs in the Linnæan ſyſtem: conſiſting of plants with hermaphrodite flowers, having but one ſtamina. Examples of Monandrous plants are Indian arrow-root, blite, &c. and conſiſts of two orders, derived from the number of ſtyles (two). See CLASSIS.

MONARDA, *(Monarda)* Lion's Tail.

It conſiſts of herbaceous, fibrous-rooted, floriferous perennials and biennials, of upright growth for the pleaſure-ground, riſing with angulated erect ſtems, two or three feet high, adorned with oblong ſimple leaves, and terminated by large heads of monopetalous ringent flowers.

Claſs and order, *Diandria Monogynia*.

*Characters.*] CALIX, is monophyllous, tubulous, cylindric, channelled, five-parted at top, and permanent. COROLLA, is monopetalous, with a cylindric tube, ringent above, divided into two lips, the upper one narrow and entire, and the under broad, reflexed, and three-parted. STAMINA, two briſtly filaments involved in the upper lip, and

and compreſſed erect antheræ. PISTILLUM, a quadrifid germen, filiforme ſtyle, involved with the ſtamina, and acute bifid ſtigma. PERICARPIUM, none, four naked ſeeds lodged in the calix.

There are about three ſpecies cultivated in our gardens; are all North American plants, and hardy enough to ſucceed here in the open ground; proper for ornamenting the pleaſure-garden as flowery plants.

The principal ſpecies are;

[1]MONARDA *Fiſtuloſa.*—(*Perennial*).

*Fiſtulous Canada Monarda.*] Hath a fibrey, ſtrong, ſpreading root; upright, obtuſe-angular, hairy ſtems, riſing a yard high, branching out at top; oblong, broad-baſed, pointed, hairy, oppoſite leaves, on long foot-ſtalks; and all the ſtalks and branches terminated by large heads of fiſtulous purple flowers.

[2]MONARDA *Didyma.*—(*Perennial*).

*Didynamous Penſylvanian Scarlet Monarda, or Oſwego Tea.*] Hath a creeping root; upright, acute-angular ſtems, riſing two feet high; oval-lanceolate, ſmooth, oppoſite leaves, on ſhort foot-ſtalks; and the branches terminated by large heads of bright-red flowers, ſometimes having didynamous ſtamina.

The leaves of this ſpecies are remarkably odoriferous, and in North America are ſometimes uſed for tea.

[3]MONARDA *Punctata.*—(*Biennial*).

*Punctated Virginian Monarda.*] Hath fibrey roots; upright ſquare ſtalks, branching quite from the bottom to top, about two feet high; ſpear-ſhaped, ſerrated leaves, of different ſizes in cluſters at each joint; and large verticillate, yellow flowers, having the corolla punctated or dotted with purple.

All theſe plants flower here abundantly in July, make a very ornamental appearance; ſucceeded by ripe ſeed in autumn, by which all the ſorts may be raiſed; the perennial ſorts alſo by roots and cuttings. See the *Propagation.*

The flowers are univerſally hermaprodite, monopetalous, and ringent, numerous and collected into heads, each having a leafy involucrum.

All the three ſpecies are very hardy, the firſt and ſecond are perennials, the other is biennial, and ſometimes annual, if raiſed early in ſpring. They all ſucceed in any open compartment, and are proper furniture for the embelliſhment of the pleaſure-ground, in the elegance of their flowers, which are very conſpicuous, continuing long in full beauty, and are all fine aromatics.

The propagation of all the ſorts is by ſeed; the perennials alſo by parting the roots, and by ſlips and cuttings.

By Seed.—Sow it in autumn, or early in ſpring, in a bed of good earth, and rake it in: the plants will ſoon riſe, and be fit to prick out in June, in nurſery rows half a foot aſunder, giving water, and let them remain till October or November, then tranſplant them where they are to flower.

By planting the Roots.—Autumn or early in the ſpring is the proper time, when, of the two perennial ſorts, divide or ſlip the roots into ſets; almoſt every bit will readily grow, planting them either in a nurſery for a year, or, if ſtrong, at once where they are to remain, and each will flower next ſummer.

By Slips, &c.—In May or June take off ſome robuſt ſlips or cuttings of the branches, five or ſix inches long, plant them in a ſhady border, giving occaſional waterings, and they will readily grow, and form good plants by autumn.

MONOECIA, the name of the twenty-firſt claſs in the Linnæan ſyſtem, conſiſting of plants with male and female flowers, ſeparated on different parts of the ſame plant. Examples of monoecious plants, are cucumber, melon, gourd, &c. and conſiſts of eleven orders, from the number of ſtyles (eleven). See CLASSIS.

MONOPETALA, Monopetalous, of one petal; applicable to flowers only; and a corolla formed of one leaf, or petal, is termed Monopetalous. A Monopetalous corolla is ſometimes wholly entire, without any diviſion; ſometimes is cut into two parts, *biſidum*; in three, *triſidum*, or *tripartite*; in four, *quadriſidum*; in five, *quinqueſidum*; in many, *multiſidum*, &c. See COROLLA.

MONOPHYLLA, Monophyllous, or one leaved, applicable moſt commonly to the calix of flowers; for a calix of one leaf only, is termed Monophyllous, and which ſometimes conſiſts of one entire piece without diviſions, *integerrimum*; ſometimes cut into two, *biſidum*; ſome into three, *triſidum*; in four, *quadriſidum*; in five, *quinqueſidum*; in many, *multiſidum*, or *multipartite*. See CALIX and PERIANTHIUM.

MORUS, Mulberry-tree.

This genus is wholly of the tree kind, and moſtly deciduous; conſiſting of about ſix or ſeven ſpecies, four of them hardy for the open

ground;

ground; ſome of which as fruit-trees, and ſome for variety; and two are tender exotics, rarely cultivated here: all of them adorned with large, heart-ſhaped, oval, and oblong, rough leaves; and monoecious apetalous flowers, the males in amentums, and the females in round heads, formed of the ſucculent calixes, which become the fruit.

Claſs and order, *Monoecia Tetrandria.*

*Characters.*] CALIX, monoecious flowers, the males collected into amentums, having cups divided into four oval concave parts; and the females into round cluſters, having cups compoſed of four roundiſh, ſucculent, permanent leaves. COROLLA, none. STAMINA, in the males, four ſubulate filaments, and ſimple antheræ. PISTILLUM, in the females a cordate germen, two ſubulate, long, reflexed ſtyles, and ſimple ſtigmas. PERICARPIUM, none, the female calixes become large, fleſhy, ſucculent berries, full of tubercles, each tuberance having an oval acute ſeed.

The moſt remarkable ſpecies of this noted genus are the four following, all of hardy growth; the firſt of which is the common Mulberry of our gardens.

[1]MORUS *Nigra.*

*Common Black-fruited Mulberry-tree.*] Riſes with an upright, large, rough trunk, dividing into a large, branchy, very ſpreading head, riſing twenty feet high or more; large, heart-ſhaped, rough leaves; and monoecious flowers; ſucceeded in the females by large, ſucculent, black berries.

*Variety.*] With jagged leaves and ſmaller fruit.

This ſpecies is the proper Mulberry-tree for general cultivation in this country for its fruit; the tree being a plentiful bearer, and the fruit ripen in good perfection in Auguſt and September.

[2]MORUS *Alba.*

*White Mulberry-tree.*] Riſes with an upright trunk, branching twenty or thirty feet high; garniſhed with large, oblique, heart-ſhaped, ſmooth, light-green, ſhining leaves; and monoecious flowers; ſucceeded by pale-whitiſh fruit.

*Variety.*] With purpliſh fruit.

[3]MORUS *Papyrifera.*

*Paper Mulberry-tree of Japan.*] Grows twenty or thirty feet high; with large palmated leaves, ſome trilobate, others quinquelobed; and monoecious flowers, ſucceeded by ſmall black fruit.

In the countries where this tree grows naturally, the inhabitants make paper of the bark.

[4]MORUS *Rubra.*

*Red Virginia Mulberry.*] Grows thirty feet high; with very large, heart-ſhaped, rough leaves, hairy underneath; and monoecious flowers, ſucceeded by large, reddiſh berries.

All theſe trees are very hardy, ſucceed in any common ſoil and ſituation. The *Morus Nigra*, Black Mulberry, is the only ſort proper to cultivate as a fruit-tree for its fruit, the others are principally employed here to form variety in our ornamental plantations, of which the White and Paper Mulberry, are the moſt common, the red ſort being very ſcarce in the Engliſh gardens; the black, and the white-fruited kinds, are alſo eminent for their leaves to feed ſilk-worms, they being the principal food of theſe valuable inſects; but the White Mulberry leaves are in the moſt eſteem for this purpoſe; and abroad, in France and Italy, &c. vaſt plantations of the trees are made ſolely for their leaves to feed ſilk-worms, which amply reward the poſſeſſors with the annual ſupply of ſilk they ſpin from their bowels: plantations of the ſame trees has formerly been recommended in this country for the purpoſe of ſilk-worms, to introduce the manufacturing of raw ſilk, ſince it is obſervable that where the trees thrive, the ſilk-worms will alſo proſper: all recommendations, however, have proved fruitleſs, although it in time might probably turn to a national advantage.

The leaves of theſe trees are generally late before they begin to come out, the buds ſeldom beginning to open till the middle or towards the latter end of May, according to the temperature of the ſeaſon; and when theſe trees in particular begin to expand their foliage, it is a good ſign of the near approach of fine warm ſettled weather: the white Mulberry, however, is generally forwarder in leafing than the black.

The flowers and fruit come out ſoon after the leaves; the males in amentums, as before hinted, and the females in ſmall roundiſh heads; neither of which are very conſpicuous, nor poſſeſs any beauty, but for obſervation; the female or fruitful flowers always riſe on the extremity of the young ſhoots, on ſhort ſpurs; and with this ſingularity, the calixes of the flowers become the fruit, which is of the berry kind, and being compoſed of many

tuberances, each of theſe furniſh one ſeed. See *Characters*. The fruit ripens here gradually from about the middle of Auguſt until the middle of September; which in dry warm ſeaſons ripen in great perfection, but when it proves very wet weather, they ripen but indifferently, and prove devoid of flavour.

Conſidered as fruit trees, the black-fruited kind is the only proper ſort to cultivate, the trees being not only the moſt plentiful bearers in this country, as before noticed, but the fruit are larger, and much finer flavoured than the white kind, which is the only ſort, beſides the Black Mulberry, that bear fruit in England.

The Black Mulberry, therefore, as a fruit-tree, may be trained either as a ſtandard, half-ſtandard, dwarf-ſtandard, and as wall-trees and eſpaliers. Standards is the moſt common mode of cultivating them, in gardens and orchards, and in which they bear very abundantly; but in large gardens, where there is ſcope to work upon, a few trees may be alſo trained in each of the other above methods: they will effect the greater variety; and thoſe againſt walls and eſpaliers will generally have larger fruit, ripen ſooner with an improved flavour; and which will be ſucceeded by thoſe upon the ſtandards: remark, however, to allot a ſufficiency of ſtandards to furniſh the principal crop of fruit, which, if for private uſe, half a dozen trees may be ſufficient, though I have known one large tree furniſh more Mulberries than was neceſſary for the ſupply of a great family.

The trees may be planted either in the kitchen-garden, orchard, or pleaſure-ground, allowing them a dry ſituation and ſunny expoſure, both of which being requiſite to promote the early ripening of the fruit, and give it due flavour; ſtandard Mulberries are often diſpoſed ſingly on graſs ground, in which when grown up into ſpreading heads, they have a fine effect, and their fruit may be always readily gathered; though when growing on cultivated ground, it is probable the fruit may be larger: the ſtandards ſhould ſtand twenty or thirty feet aſunder at leaſt, to give full ſcope to their ſpreading heads; and the dwarfs, for walls and eſpaliers, fifteen or twenty feet diſtance from one another; remarking, that in all the above modes of training, not to practiſe any general ſhortening of the ſhoots, but, except on particular occaſions, leave them moſtly at full length; for as the fruit is produced near the ends of the young wood, ſhortening would be cutting off the parts deſigned by nature to yield the fruit. See their *Propagation*, &c.

Mulberry-trees rarely bear any conſiderable quantity of fruit till they are many years old; and old trees are always not only the moſt fruitful, but the fruit larger and of a richer flavour.

Ripe Mulberries are an agreeable ſweet fruit, of a refreſhing reliſh, and fine cooling quality, and therefore excellent for the deſert; alſo proper for ſome culinary uſes, as for tarts, &c. and the ſyrup of Mulberries is well known.

The bark of the root of theſe trees being a fine bitter aſtringent, is admirable for killing worms in the human body.

*Propagation of all the Sorts.*

The propagation of all the ſorts is by ſeed, by layers, and by cuttings; alſo by graſting and inoculation.

By Seed.—All the ſorts may be raiſed in amazing plenty from ſeeds in the open ground, but remarking that when they are deſigned principally as fruit-trees, I would not recommend this practice, becauſe the ſeedling-trees are apt to vary, and out of numbers ſo raiſed, there may be but few good ſorts, or that prove good bearers; therefore for fruit-trees, layers, cuttings, grafting, &c. are the only certain methods to continue the approved ſorts. By ſeed, however, is eligible enough where large quantities are required for barren plantations, or for ſhrubberies, &c. it is generally procured from France or Italy; and March is the proper time of the year of ſowing them, which may be either in a warm border, or in a moderate hot-bed, earthed half a foot deep, and arched with hoops to be matted in nights and cold weather. Sow the ſeeds in ſhallow drills near half an inch deep: give refreſhments of water occaſionally, and when the plants appear, mat them in cold nights and morning froſts, repeating the waterings all ſummer in dry weather; and in winter continue the occaſional ſhelter of mats when froſts approach. And after having two years growth in the ſeed-bed, plant them out in nurſery-rows two feet aſunder, and half a yard apart in the lines: here let them remain a few years, training them for their ſeveral purpoſes, as above mentioned, the principal part for ſtandards, with ſingle ſtems, ſix feet high; others for half-ſtandards; and a few for dwarfs, heading down

the dwarfs, while young, near the ground, to force out branches near the bottom, to train either for dwarf-ſtandards, or for walls or eſpaliers.

But the following are the only methods of propagation by which we can with certainty continue the approved ſorts; in all of which methods always, if poſſible, propagate from trees remarkable for bearing large fruit, and plentiful crops.

By Layers.—Where great quantities are required, ſome trees ſhould be planted for ſtools, having the heads taken off near the ground to force out plenty of bottom-ſhoots near the earth for laying; for the branches of the full-grown trees are often ſo far from the ground, that they cannot be brought down low enough to be layed; in this caſe, however, where only a few are wanted, ſome large pots, boxes, or baſkets of mould may be elevated upon ſtands near the branches proper for laying. In either method lay the ſhoots by ſlit-laying, heading them to one eye above the ſurface; thus they will readily take good root, ſufficient for tranſplanting by autumn following, in nurſery-rows: as for the ſeedlings, train them in the ſame manner.

By Cuttings.—October and November is the proper ſeaſon; chuſe young ſhoots of the former ſummer, from healthful good-bearing trees, cutting them off from about eight or ten to fifteen inches long, plant them in a ſhady well-ſheltered place, in rows, ſetting them two thirds at leaſt in the ground; many of them will be properly rooted next autumn. But the moſt expeditious method is to give them the aid of a hot-bed; in March, therefore, plant a parcel of middling cuttings in pots of earth, and plunge them in any moderate hot-bed, it will greatly facilitate their rooting; being careful to harden them by degrees to the full air; give occaſional ſhelter in the following winter, and in ſpring plant them out in the nurſery-way, treating them as above directed.

By Graſting and Budding.—This is rarely practiſed, ſince they grow ſo freely by layers and cuttings; graſting and budding, however, are alſo certain methods for continuing the proper ſorts; and when intended for practice, it muſt be performed on ſeedlings of any of the ſpecies, in the uſual method.

*Culture as Fruit-trees.*

As before obſerved, they as fruit-trees may be trained both as ſtandards in the open-ground, and as dwarfs for walls and eſpaliers.

As Standards.—They may be both full ſtandards, half-ſtandards, and dwarf-ſtandards, but principally as full or half-ſtandards. To have them full-ſtandards, train them with a ſingle, upright, clean ſtem, ſix feet high at leaſt, then top them to branch out laterally at that height to form a head. Half ſtandards train with fouror five feet ſtems, then let them branch into heads. Dwarf-ſtandards may have half a yard or two-feet ſtems, at which height encourage branches all around for a head, (ſee STANDARD-TREES, DWARF-TREES, &c.) obſerving to aſſiſt the whole a little at firſt, when neceſſary, in forming their heads ſomewhat regular, by pruning irregular growths, as directed for other ſtandard and dwarf fruit-trees. In either of theſe forms they may be planted out in the garden or orchard; where let them principally take their own natural growth, giving no other pruning than regulating or retrenching any croſs-diſpoſed, or other irregular branches, or thinning where much too cloſe. Never ſhorten the ſhoots, unleſs their ends are dead; for the fruit-ſpurs always ariſe towards the extreme part of the young wood, as already obſerved.

Thus will all theſe kinds of ſtandard Mulberries gradually form themſelves into a bearing ſtate, though they rarely begin to bear any great quantity till twelve or fifteen years old.

As Dwarfs for Walls, &c.——Although the fruit ripen very well upon ſtandards, yet when trained againſt walls and eſpaliers, the ſize and flavour is often conſiderably improved; therefore it is proper to have a few trees trained in both theſe ways, i e. walls and eſpaliers, for variety: one mode of culture often ſerves both. They are at firſt to be headed down low in the nurſery, to procure branches near the ground, as directed under the article DWARF-TREES, &c. then, being thus furniſhed with ſome lower branches, plant them againſt a ſouth-wall, or in eſpaliers, fifteen feet aſunder; where train their branches along horizontally, regularly to the right and left, ſix inches aſunder, each at full length, for the reaſon already given, unleſs where ſhortening is neceſſary to obtain a ſupply of wood to fill the allotted ſpace; which ſhould be regularly covered with bearing-branches quite from bottom to top of the wall or eſpalier, at the above diſtance from one another; obſerving each year in ſummer and winter pruning, to cut out all ſuperfluous and irregular ſhoots; at the ſame time train in different

rent places of each tree ſome regular lateral ſhoots, both towards the lower and upper parts, to be coming forward to a bearing ſtate, that every part of the tree may be filled with bearing ſhoots, advancing one after another, and as the foremoſt ſhoots become too long, and require cutting off, the laterals will one after another, as juſt obſerved, be ready to ſupply their places; and likewiſe of ſuch parts as become cankered or dead.

When theſe trees are required for plantations for variety, they ſhould be trained up either to full ſtems, ſix feet high at leaſt, and then ſuffered to branch out in their natural way, or may be trained as half-ſtandards for ſmaller ſhrubberies, or even ſome as dwarfs, to cauſe a greater variety.

MOTUS, Motion. The term Motion, applied to plants, is expreſſive of the direction of growth in different parts of plants.

The direction of the Motion of the roots and ſtems is totally oppoſite; the former either running directly downward into the ground, or horizontally under the ſurface; and the ſtems direct their Motion towards the air and light of the ſun, moſtly in an upright poſition; but many run horizontally along the ſurface of the earth.

The cauſes which concur in promoting the Motions of plants, are the moiſt and warm vapours of the earth to the root, and the air and light of the ſun to the ſtem; for place any number of plants growing in pots, in a room which only admits a ſmall portion of light at one place, the ſtems will all incline towards that ſide; in cloſe dark thickets the young trees always lean to the part where the moſt light penetrates; and the new ſhoots of an eſpalier, or wall-tree, detach themſelves from the eſpalier or wall, in queſt of the free air and light.

The force of Motion ſeems to be greater in roots than in ſtems; the root without ever once going out of its way pierces the hardeſt ſoils, penetrates into walls, which it overturns, and even into rocks, which it ſplits; whereas ſtems and branches ſurmount an obſtacle, by leaving their natural direction, and over-topping it.

Although the natural direction of moſt ſtems or trunks be to aſcend, as was before obſerved, yet ſome by their weakneſs, or natural tendency deſcend, and ſometimes by means of roots breaking out all along the ſtems and branches, as in ſtrawberry, penny-royal, and many other repent plants, ſuch ſtems are by theſe roots ſtriking into the earth, tethered as it were to the ground, and only their extremities can direct their courſe upwards.

Leaves and flowers alſo direct their courſe towards the air, and light of the ſun; leaves always turn their upper ſurface outward to the air and light; very obvious in wall-trees, and that if a branch is over-turned, ſo that the leaves are turned the contrary way; they will all naturally direct their ſurfaces again gradually upward to the light and air, tho' this often coſts them ſeveral days growth: many flowers alſo preſent their ſurface directly to the ſun, and follow the diurnal courſe of that luminous body, ſuch as the ſun-flower, and moſt of the compound flowers; in all of which the diſk or ſurface looks towards the eaſt in the morning, the ſouth at noon, and the weſt at night.

During the heat of the ſun the pinnated or winged leaves, particularly of the papilionaceous tribe, riſe vertically upward; the oppoſite lobes or folioles, which compoſe theſe leaves, riſe ſo as they are generally applied cloſe together by their upper ſurfaces; but in that ſtate of the atmoſphere which generally precedes a ſtorm, or during a cloſe moiſt cloudy air, the lobes of the ſame ſort of leaves extend themſelves commonly along the foot-ſtalk; and after ſun-ſet they incline ſtill lower, and hang vertically down under the foot-ſtalk, and are applied cloſe together like the leaves of a book, by their lower ſurfaces; this Linnæas calls the ſleep of plants.

Many ſimple leaves, when the ſurface is expoſed to an ardent ſun, become concave above, but gradually recover as the heat declines.

But of all the Motions of leaves, none is ſo ſudden and rapid as that of the ſenſitive and humble plants. See MIMOSA.

Another kind of Motion in plants is elaſticity, which is reſident particularly in ſome ſorts of ſeed-veſſels, ſuch as the yellow balſamine, and ſpurting cucumber, &c. in which their fruit, when arrived at maturity, burſt open like a ſpring, and dart out their ſeeds alſo with elaſtic force to a conſiderable diſtance.

MOULD, or Earth. See EARTH.

MULCH, a ſort of ſtrawey dung, ſomewhat moiſt, and not rotted, and is uſeful in gardening, to protect the roots of new-planted choice trees or ſhrubs from ſevere froſt in winter; and from being dried by the fierce ſun or

drying winds in ſpring and ſummer, before they are well rooted; for both of which purpoſes, it is ſpread evenly on the ſurface of the ground round the ſtem of the tree, as far as the roots extend, about three or four inches thick; but which may be augmented in winter if the ſeverity of the froſt render it neceſſary.

MULTICAPSULARE, Multicapſular, or many capſules; plants whoſe ſeed-veſſel is formed of ſeveral capſules united in one as it were, ſuch as thoſe of columbine, peony, aconite, larkſpur, and the like. See CAPSULA.

MULTIFIDUS, Multifid, many parts, a flower, or calix of a flower that is divided into many ſegments; the term is alſo applicable to leaves. See FOLIA.

MULTIFLOROUS, many flowers on one foot-ſtalk; or,

MULTIPLICATUS *Flos*, a Multiplied Flower; one whoſe petals are multiplied in number beyond their natural, or characteriſtic, or ſingle ſtate, in two, three, or more ſeries; and ſuch kinds are commonly called double flowers.

All Multiplied Flowers, however, are unnatural productions, becauſe the ſingles of every genus are the original, and the doubles are accidentally produced from the ſeeds of the ſingles; for a corolla in its ſingle ſtate, whether of one or ſeveral petals, is that proper from which to draw the characters of any genus; never from doubles, which being only varieties, are not to be depended on; ſo that among botaniſts, double flowers are often termed vegetable monſters, and are diſregarded,; but, on the other hand, double flowers are often the floriſt's pride.

But a double flower is properly that whoſe petal or petals are twice repeated, though in the common acceptation of the word *double*, all flowers whether the petals are twice, thrice, or many times repeated in ſeveral ſeries, are among floriſts generally called by the general name of double flowers; in ſome the petals are often ſo multiplied as to obliterate the parts of fructification, in which ſtate they come under the denomination of luxuriant. See LUXURIANT FLOWERS.

Multiplication is leſs common in flowers naturally of one petal, than thoſe with ſeveral; in the former, however, it frequently happens, as in *campanula*, &c. though not full in the higheſt luxuriance; but in the latter are ſubject to all degrees of luxuriance from the loweſt to the higheſt, exemplified in *anemone*, *ranunculus*, *marſh-marigold*, &c. See PLENUS *Flos*.

MUSA, Plantain-tree, or *Banana*.

It conſiſts of very tall-growing herbaceous perennials of the Indies, for the hot-houſe collection, riſing each with an upright, tapering, ſoft ſtem, fifteen or twenty feet high; adorned at top all around with enormous leaves, two or three yards long, and proportionably broad; and from their centre a large fungus flower-ſtalk; terminated by a vaſt nodding ſpadix of monopetalous, ringent flowers; protruded from the ſpatha; ſucceeded by a great cluſter of cucumber-ſhaped fruit, a ſingle cluſter weighing ſometimes forty or fifty pounds; are eſculent and of a delicious flavour.

Claſs and order, *Polygamia Monoecia*.

*Characters.*] CALIX, male, female, and hermaphrodite flowers on the ſame ſpadix, having female-hermaphrodites on the lower part, and male-hermaphrodites above, all in cluſters, each bunch having a ſpatha for a cup, which is deciduous. COROLLA, each floret of the ſpadix is ringent, forming an upper lip, and a nectarium the lower lip. STAMINA, in the females ſix ſubulate filaments, five of them in the corolla, the other in the nectarium, and is double the length of the others, and terminated by a linear antheræ, the reſt have none; but in the males are equal in the length, and have all antheræ. PISTILLUM, a large, long, triquetrous germen below the receptacle, a cylindric erect ſtyle, and capitated roundiſh ſtigma, but no ſtigma in the males. PERICARPIUM, in the females a very long, fleſhy, obſoletely-triquetrous, trilocular, baccaceous fruit.

The plants of this genus having ſtems ſo ſoft and porous as not to deſerve the name of trees, only in ſtature, eſpecially as they are perennial only in root, the ſtems dying down to the ground annually in their native ſoil, after having borne their crop of fruit; they are naturally ſo quick in growth, as to ſhoot from the bottom to fifteen or twenty feet height, flower, and produce ripe fruit, all in the ſpace of nine or ten months: the ſtem is about half a foot thick, and of ſo ſoft a nature, as it may be eaſily cut down at one ſtroke.

The ſpecies are;

1 MUSA *Paradiſiaca*.

*Tree of Paradiſe, or Common Plantain-tree.*] Hath a ſtrong, fibrey, very ſpreading root; an herbaceous, upright, taper ſtem, riſing fifteen or twenty feet high; terminated by a cluſter of very large leaves, about two yards long, and half a one broad; and a large,

long, nodding ſpadix of whitiſh-yellow, polygamous flowers, having the males perſiſtent; ſucceeded in the others by an exceeding large cluſter of long, narrow, yellowiſh, delicious fruit.

Some authors have ſuppoſed this tree, from the prodigious ſize of its leaves, to be that whoſe leaves our firſt parents uſed for cloathing in paradiſe; and alſo that the fruit is the forbidden apple which Eve gave to Adam: the ſacred text, indeed, calls the leaves employed for this purpoſe, fig leaves; but the fruit of this is alſo often by the moſt antient authors called a fig, its nature and taſte alſo reſembles that fruit; and its leaves, by reaſon of their great ſize and ſolidity, were much more proper for a veil or covering than thoſe of any ſpecies of *ficus*, which being ſeldom more than eight or ten inches long, and five or ſix broad, whereas thoſe of the ſpecies of this genus, *Muſa*, are two or three yards long with proportionable breadth, could not fail of being pitched upon in preference to all others, eſpecially as they might be eaſily ſewed together with the numerous thread-like filaments, that may with the utmoſt facility be peeled from the ſtem of the tree.

[2]MUSA *Sapientium.*

*Sapient, Spotted Muſa, or Banana-tree.*] Riſes with an upright, herbaceous, ſpotted ſtem, twelve or fifteen feet high; terminated by a cluſter of leaves near two yards long, and half a one broad; a large nodding ſpadix of flowers, having the males deciduous; and large cluſters of ſhort, oblong, very luſcious fruit.

[3]MUSA *Bihai.*

*Bihai, or Broad-leaved Muſa.*] Riſes with an upright ſoft ſtem, fifteen or twenty feet high; with leaves near three yards long, and one broad; and an erect ſpadix of flowers, having a perſiſtent ſpatha; ſucceeded by large cluſters of fruit.

Theſe curious exotics thrive freely here in our ſtoves, flower and produce their enormous bunches of fruit in tolerable perfection; but as the plants grow very tall, and the leaves ſo exceeding large, they require very capacious ſtove-room, both in width and height: they muſt be potted in large pots of rich mould, and plunged conſtantly in the bark-bed, watering them plentifully in ſummer three or four times a week, and about twice in winter.

Their propagation is by ſuckers ariſing from the root, particularly after having fruited, which may be taken off at any time in ſummer, with fibres to their bottom, planted in pots, and plunged in the bark-bed, and they will readily grow; obſerving according as their roots advance in growth to ſhift them into larger pots.

MUSCI, Moſſes, a tribe or family of imperfect plants, which conſtitute the ſecond order of the twenty-fourth claſs, *Cryptogamia*. See CLASSIS.

The plants of this order are for the moſt part ſo exceedingly minute, that their fructification are either entirely concealed, or, from their minuteneſs, or ſituation, are imperfectly viſible. There are of this order not leſs than eleven genera, each of which comprehending many ſpecies, and are moſtly very diminutive and creeping; with exceedingly weak ſtems, creeping and rooting as they extend, cloſely ſet with ſmall cloſe-ſitting leaves; and extend themſelves in a tufted manner, forming a ſort of carpet on the ground, trees, and ſtones; the ſmalleſt ſeldom exceed the third of an inch in height, and the largeſt not above five or ſix; moſtly perennial and evergreen, delight chiefly in moiſt ſhady ſituations, and are remarkably ſlow of growth; the flowers ſo very ſmall that their fructifications have not by the fineſt glaſſes been yet perfectly diſcovered, ſo as to diſtinguiſh their ſex; though ſuppoſed to be univerſally male and female diſtinct; ſometimes they ſit cloſe to the branches, and ſometimes elevated upon long ſlender foot-ſtalks, and are ſucceeded by ſeed, by which they propagate themſelves.

Though from the exceeding minuteneſs of theſe plants, it was formerly ſuppoſed they were only excreſcences produced from the earth, trees, &c. but are no leſs proper plants than thoſe of greater magnitude, though imperfectly viſible in ſome of their eſſential parts; for many inſects are ſo ſmall that they are hardly viſible, much leſs ſo muſt be their eyes, mouth, &c. yet they poſſeſs all the perfect parts of life; ſo it is of the order of plants under conſideration, being poſſeſſed of proper flowers and ſeed.

The ſuppoſed male flowers conſiſt entirely of the antheræ and their covering; a ſort of very ſmall cawl-ſhaped *calyptra*, ſuſpended over the tops of the ſtamina, like an extinguiſher.

The ſuppoſed female flowers are generally formed into a vaſtly ſmall cone, compoſed of numerous ſcales, each ſaid to contain in its wing a ſingle ſeed, as fine as the ſmalleſt duſt.

None

None of theſe plants are ever cultivated, ſo only mention them for their ſingularity, and as conſtituting the ſecond order of the remarkable claſs *Cryptogamia*.

Some of the Moſſes grow in great plenty upon trees, particularly fruit-trees growing cloſe in orchards, eſpecially on cold, moiſt, barren ſoils, and frequently prove very injurious to ſuch trees: the only remedy is to cut down ſome of the trees to admit the ſun and air, and then thin the branches of the remainder; and in winter with an inſtrument of iron hollowed on the edge to fit the branches, ſcrape off the rougheſt of the Moſs, and by two or three repetitions it will be deſtroyed, but more effectually if the ground between the trees is alſo ploughed or digged a due depth, to give vigour to the roots, that the trees may aſſume a free growth at top.

Moſt of the plants of this numerous tribe have the ſingular property, after being preſerved dry ſeveral years, that being moiſtened they will reſume their original verdure.

Some of theſe plants have a wonderful efficacy in preſerving dry ſuch bodies as are ſuſceptible of moiſture, and retaining for a long time the humidity of young plants out of ground; for which reaſon tender young plants or cuttings, &c. as are to be ſent to any diſtance, if wrapped up in ſome ſorts of moſs, it will greatly preſerve their vegetative faculty.

MYRICA, Candleberry Myrtle.

The plants are of the ſhrub kind, conſiſting of hardy deciduous ſhrubs for the pleaſure-garden, and ever-greens for the greenhouſe; all of which riſing with ſhrubby, branching ſtems, from about three to five feet high; garniſhed with oblong, ſimple, entire leaves; and dioecious, apetalous flowers in amentums; ſucceeded by cluſters of ſmall berries; which of ſome of the ſpecies affords a ſort of green wax, with which candles are made; hence the name of Candleberry Myrtle.

Claſs and order, *Dioecia Tetandria*.

*Characters.*] CALIX, male and female flowers on ſeparate plants, in oblong, oval amentums, imbricated on all ſides, formed of many ſmall, concave, moon-ſhaped ſcales, ſerving as calixes, each containing one flower. COROLLA, no petals. STAMINA, in the males four, and ſometimes ſix filaments, and great didymous antheræ, with the lobes bifid. PISTILLUM, in the females an oval germen, two ſtyles, and ſimple ſtigmas. PERICARPIUM, an unilocular berry, having one ſeed.

There are four ſpecies in the Engliſh gardens, two of them hardy and deciduous, and the others tender and ever-green.

*Hardy Deciduous Kinds.*

[1]MYRICA *Cerifera*.

*Ceriferous, or Wax-bearing Myrica, commonly called Candleberry Myrtle.*] Hath an upright ſhrubby ſtem, branching five or ſix feet high, with yellowiſh-brown branches; lanceolate, ſlighly-ſerrated, ſhining green leaves, three inches long, and one broad, placed irregularly on very ſhort foot ſtalks; and dioecious, amentaceous, ſmall, whitiſh flowers at the ſides of the branches; ſucceeded in the female plants by cluſters of ſmall blue berries, replete with a ſort of green waxy matter.

*Variety.*] Dwarf Carolina Candleberry Myrtle with broad leaves.

They are natives of North America, but have been long reſidents of our gardens, and both the varieties are choice furniture for the ſhrubbery; whilſt young they often retain their leaves like an ever-green great part of winter; but when older they conſtantly ſhed their leaves in autumn: the leaves of both ſorts poſſeſs a very agreeable fragrance of an aromatic nature, like a Myrtle.

It is from this ſpecies the North Americans procure the wax for candles, before mentioned.

[2]MYRICA *Gale*.

*Gale, Sweet Willow, or Dutch Myrtle.*] Hath under-ſhrubby, upright ſtems, branching three or four feet high; lanceolate, ſlightly-ſerrated leaves, an inch and a half long, on very ſhort foot-ſtalks; and dioecious, amentaceous, ſmall, whitiſh flowers; ſucceeded in the female plants by cluſters of ſmall berries.

This grows naturally on ſome boggy grounds both in England and other nothern parts of Europe: it is cultivated as furniture for the ſhrubbery, but muſt have a moiſt ſituation.

*Ever-green Kinds for the Green-houſe.*

[3]MYRICA *Quercifolia*.

*Oak-leaved African Myrica.*] Hath a ſhrubby ſtem, branching three or four feet high; oblong, oppoſitely-ſinuated, cloſe-ſitting, ſmooth leaves,

leaves, an inch and a half long, and half as broad; and whitiſh-green flowers, in oval amentums; ſucceeded by ſmall round berries.

*Variety.*] With hairy leaves.

4 MYRICA *Cordifolia.*

*Heart-leaved Æthiopian Myrica.*] Hath a ſhrubby, ſlender ſtem, branching four or five feet high; heart-ſhaped, ſerrated, cloſe-ſitting leaves; and roundiſh amentums of flowers; ſucceeded in the female plants by ſmall berries.

All theſe ſhrubs flower in June and July, which in the firſt and ſecond ſorts are ſucceeded by berries in our gardens; but in the others rarely any in England; neither flowers nor fruit are ornamental; ſo that the merit of the ſhrubs conſiſts in the variety and aromatic fragrance of their leaves, and for which they demand admittance in every good collection; and are all kept in the nurſeries for ſale.

The flowers conſiſt of oblong-oval amentums of many apetalous florets. See the *Characters.*

### *Their Propagation.*

Their propagation is by ſeed, layers, and ſuckers.

By Seed.—The ſeed are procured from the places where the reſpective ſpecies grow naturally. Sow them as ſoon as they can be procured, in boxes of rich earth, half an inch deep, and at the approach of hot weather move them to ſhade, to remain all ſummer, they ſometimes come up the ſame year, if ſowed early, otherwiſe often not till the ſecond; however in winter remove the hardy kinds under a warm hedge, and the others in garden-frames to have ſhelter of the glaſſes in bad weather, and they will all come up the ſecond ſpring; giving water all ſummer, ſhelter again in winter, and in ſpring plant them out, the hardy ſorts in nurſery rows to remain two or three years till proper for the ſhrubbery; and plant the tender ſorts in pots, to be placed among the green-houſe plants.

By Layers.—Chuſe for this operation the young wood, which lay by ſlit-laying in autumn; and during the following ſummer water them plentifully in dry weather, and they will be tolerably rooted by the autumn following; but if not, let them remain another year, to effect it properly; then tranſplant the hardy ſorts in nurſery-rows, to remain till fit for the ſhrubbery; and the tender kinds plant in pots to manage as green-houſe plants.

By Suckers.—The hardy ſorts ſometimes ſend up a few ſuckers, which in autumn may be taken up with roots, and planted out in the nurſery for a year or two.

Cuttings of all the ſorts may alſo be tried, though not to be depended on: chuſe the quite young ſhoots, and if ſome are planted in pots plunged in a hot-bed and covered cloſe with a hand-glaſs, ſome of them may probably take root.

MYRTUS, Myrtle-tree.

This celebrated plant of antiquity compriſes many elegant varieties of the ſhrub kind, for our green-houſe collections, and ſome beautiful ſpecies for the hot houſe, all delightful ever-greens of great fragrance; riſing with branchy ſtems eight or ten feet high, or more, in their native ſoil; cloſely garniſhed with ſimple entire leaves, and quinquepetalous, hermaphrodite flowers from the ſides of the branches, ſucceeded by oval berries.

Claſs and order, *Icoſandria Monogynia.*

*Characters.*] CALIX, is monophyllous, five-parted, placed on the germen, and permanent. COROLLA, is quinquepetalous, the petals oval, and inſerted into the calix. STAMINA, twenty or more capillary filaments inſerted into the calix, and very ſmall antheræ. PISTILLUM, a germen under the corolla, ſlender ſtyle, and obtuſe ſtigma. PERICARPIUM, an oval umbilicated trilocular berry, each cell having one kidney-ſhaped ſeed.

To this genus Linnæus adds the *Pimento*, or all-ſpice, a beautiful ever-green aromatic, and hot-houſe plant.

There are about four ſpecies of this genus retained in the Engliſh gardens; one is the common Myrtle, a very comprehenſive ſpecies, being the parent of all thoſe different varieties of Myrtle found in our green-houſe collections: the other three ſpecies are for the ſtove.

### *Green-houſe Kind.*

One ſpecies only is for the green-houſe, the common Myrtle, but which, as before obſerved, affords many varieties.

The ſpecies are;

1 MYRTUS *Communis.*

*Common Myrtle-tree.*] Riſes with a ſhrubby, upright, firm ſtem, branching numerouſly all around into a cloſe full head, riſing eight or ten feet high; very cloſely garniſhed with

with oval-lanceolate, entire, moſtly oppoſite leaves, from half an inch to an inch and a half long, and one broad, on ſhort foot-ſtalks; and numerous, ſmall, pale flowers from the axillas, ſingly on each foot-ſtalk, having diphyllous involucrums; each flower ſucceeded by a ſmall, oval, dark-purple berry.

The botanic deſcription is, Myrtus with ſolitary, or ſingly-placed flowers, having a diphyllous involucrum.

The moſt material varieties are;

*Broad-leaved Roman Myrtle.*—Hath oval, ſhining, green leaves, an inch and a half long and one broad, and is remarkably floriferous.

Gold-ſtriped broad-leaved Roman Myrtle.

*Broad-leaved Dutch Myrtle.*—Hath ſpear-ſhaped, ſharp-pointed, dark-green leaves, an inch long, and about three quarters of one broad.

Double-flowered Dutch Myrtle.

*Broad-leaved Jews Myrtle.*——Having the leaves placed by threes at each joint; by which particular circumſtance this ſpecies is in univerſal eſtimation among the Jews in their religious ceremonies, particularly in decorating their tabernacles, and for which purpoſe many gardeners about London cultivate this variety with particular care, to ſell to the above people, who are often obliged to purchaſe it at the rate of ſix-pence or a ſhilling for a ſmall branch; for the true ſort having the leaves exactly by threes, is very ſcarce, and is a curioſity; but by care in its propagation, taking only the perfectly ternate-leaved ſhoots for cuttings, it may be encreaſed faſt enough, and is worth the attention of the curious, and particularly thoſe who raiſe Myrtles for the London markets.

*Orange-leaved Spaniſh Myrtle.*—Has oval, ſpear-ſhaped leaves, an inch and a half long or more, and one broad, in cluſters round the branches, and reſemble the ſhape and colour of orange-tree leaves.

Gold ſtriped-leaved orange Myrtle.

*Common Upright Italian Myrtle.*—Hath its branches and leaves growing more erect, the leaves oval, lanceolate-ſhaped, acute-pointed, and near an inch long, and half a one broad.

Silver-ſtriped upright Italian Myrtle.

White-berried upright Italian Myrtle.

*Portugal Acute-leaved Myrtle.*—Has ſpear-ſhaped, oval, acute-pointed leaves, about an inch long.

*Box-leaved Myrtle.*—Hath weak branches, ſmall, oval, obtuſe, lucid-green, cloſely-placed leaves.

Striped box-leaved Myrtle.

*Roſemary-leaved Myrtle.*——Hath erect branches, ſmall, narrow, lanceolate, acute-pointed, ſhining, green, very fragrant leaves.

Silver-ſtriped roſemary-leaved Myrtle.

*Thyme-leaved Myrtle.*——Hath very ſmall cloſely-placed leaves.

*Nutmeg Myrtle*—Hath erect branches and leaves; the leaves oval, acute-pointed, and finely-ſcented like a nutmeg.

*Broad-leaved Nutmeg Myrtle.*—Silver-ſtriped-leaved.

*Criſtated, or Cock's-comb Myrtle, frequently called Bird's-neſt Myrtle.*—Hath narrow, ſharp-pointed leaves, criſtated at intervals.

Theſe are the principal varieties of the *Myrtus Communis*; but of which ſorts there are ſeveral intermediate varieties of leſs note; and more may ſtill be obtained from ſeed, though the plants are rarely raiſed from ſeed in England, but moſtly by ſlips and cuttings.

They are all beautiful ever-green ſhrubs of exceeding fragrance; exotics originally of the ſouthern parts of Europe, and of Aſia and Africa, and conſequently in this country require ſhelter of a green-houſe in winter: all of which, though rather of the ſmall-leaved kind, have their foliage cloſely placed, and remain all the year, and are very floriferous in ſummer; and when there is a collection of the different ſorts, they afford an agreeable ſource of variety with each other; they therefore claim univerſal eſteem as principal green-houſe plants, eſpecially as they are all ſo eaſily raiſed from cuttings, and of ſuch eaſy culture, as to be attainable in every garden, where there is any ſort of green-houſe, or garden-frames furniſhed with glaſſes for protecting them in winter from froſt: but ſome of the broad-leaved ſorts are ſo hardy as to ſucceed in the full ground, againſt a ſouth-wall and other warm expoſures all the year, by only allowing them ſhelter of mats occaſionally in ſevere froſty weather: ſo that a few of theſe ſorts may be alſo exhibited in a warm ſituation in the ſhrubbery: obſerving, however, all the ſorts are principally to be conſidered as green-houſe plants, and a due portion of them muſt always remain in pots to move to that department in winter. See their *Propagation and General Culture.*

*Stove Kinds.*

There are ſeveral ſpecies of the ſtove temperature, as being natives of the Indies; but there

there are not more than the four following ſorts commonly met with in the Engliſh gardens, all of which are beautiful ever-greens, with larger leaves than the *Myrtis Communis*, and are moſtly ſtrong aromatics.

[2]MYRTUS *Zelanica.*

*Ceylon White-berried Myrtle.*] Hath a ſhrubby upright ſtem, branching erectly ſix or eight feet high; oval, ſhining-green, oppoſite, very odoriferous leaves, on ſhort foot-ſtalks; and all the branches terminated by pedunculi, each ſuſtaining many flowers; ſucceeded by ſnowey-white berries, but rarely in England.

[3]MYRTUS *Pimenta.*

*Pimento, or Jamaica All-ſpice-tree.*] Riſes with an upright tree-ſtem, branching regularly, twenty or thirty feet high, having a ſmooth brown bark; large, oblong-oval, ſtiff, ſhining, very odoriferous leaves, like thoſe of bay, placed alternate; and at the ſides and termination of the branches large looſe bunches of greeniſh flowers; ſucceeded by round, duſky, hard, ſpicey fruit, called all-ſpice, or Jamaica pepper.

This ſpecies is wholly an admirable fine aromatic, its leaves are remarkably fine ſcented; and its fruit is that valuable ſpice, Jamaica pepper, or all-ſpice, ſo called becauſe it is ſuppoſed to partake of the odour and taſte of moſt other ſpices. The tree grows in great abundance in the iſland of Jamaica, where its fruit is made a conſiderable branch of trade; is generally gathered a little before it acquires full growth, and dried in the ſun ten or twelve days, is then packed up ready for exportation to Europe.

[4]MYRTUS *Dioeca.*

*Dioecious American Myrtle.*] Riſes with an upright tree-ſtem, branching many feet high; oblong, thick, oppoſite, odoriferous leaves; and at the axillas and ends of the branches pedunculi dividing into trichotomous panicles of dioecious flowers; ſucceeded by ſmall, globular, ſpicey berries.

Every part of the tree is a ſtrong aromatic.

[5]MYRTUS *Braſiliana.*

*Braſilian Inodorous Myrtle*] Riſes with a branching ſtem, having a whitiſh bark; broad, oval, ſhining, oppoſite, inodorous, or ſcentleſs leaves, and naked pedunculi, ſuſtaining ſolitary flowers with ciliated petals; ſucceeded by large oval fruit.

All theſe five ſpecies of Myrtus are exotics of the ſhrub and tree kind, though in this country, as being confined in pots, the largeſt of them aſſume only the growth of moderate ſhrubs. The firſt ſpecies, Common Myrtle, is conſiderably the moſt noted ſpecies of this genus in this country; where in moſt of our green-houſe collections one or other of the varieties is found in tolerable plenty; but all the varieties of it highly merit notice. The other four ſpecies are rare in England, they however are retained in many curious gardens, in the ſtove collection, more particularly the *Pimento*, which is a very beautiful odoriferous ever-green, and exhibits a fine variety in the ſtove at all ſeaſons: in ſhort all the ſpecies, both green houſe and ſtove kinds, have a pretty effect as ever-greens, and ſome of the ſorts flower very ornamentally, particularly of the Common Myrtle.

With reſpect to flowering, all the varieties of the *Myrtus Communis* flower here in July and Auguſt, moſt of which are very floriferous, but more particularly the broad-leaved Roman kind, which is often covered with flowers; and in ſome of the ſorts are ſucceeded here by berries ripening in winter. Some of the ſtove kinds alſo flower here, but are rarely ſucceeded by fruit in England.

The flowers, however, of moſt of the ſorts are ſmall, but numerous; and are all formed each of five oval petals, and many ſtamina. See the *Characters.*

As all the ſpecies require occaſional ſhelter here, they muſt be kept always in pots, for moving to the proper places of ſhelter, according to their nature; the *Myrtus Communis* and varieties to the green-houſe in winter; the others to the ſtove, to remain all the year; therefore let all the ſorts be potted in light rich earth, and, as they advance in growth, ſhift them into larger pots, managing the Myrtles as other green-houſe ſhrubs; and the ſtove-kinds as other woody exotics of the ſtove. See their *Propagation and General Culture*; alſo GREEN-HOUSE and STOVE PLANTS.

But, as we before obſerved, the broad-leaved *Myrtus Communis*, being hardier than the ſmaller-leaved kinds, ſome of them may alſo be turned out into the full ground in a warm ſituation againſt a wall, &c. allowing them ſhelter of mats in froſty weather, and mulch the ground over their roots: they will frequently ſucceed tolerably, and effect a good variety in ſuch places.

*Propagation and General Culture.*

The propagation of the *Myrtus Communis* and varieties is effected abundantly by ſlips

or cuttings, alſo by layers; but as the former ſtrike freely, it is the moſt eligible method for raiſing any conſiderable quantity, as alſo the handſomeſt plants, which may be ſtruck either in natural earth, or by aid of hot-beds, to bring them more forward.

By Slips and Cuttings.—The young ſhoots, either of the ſame or former year's growth, of from about two or three to five or ſix inches long, either ſlipped or cut off, are the proper parts for planting; and, as above ſaid, may be ſtruck either in natural earth without artificial heat, or by aid of hot-beds; but by the latter you may greatly facilitate the rooting and firſt effort of growth. By either method the work may be performed any time from March or April until Auguſt, though June or July is the moſt common ſeaſon practiſed, eſpecially when intended to uſe the ſhoots of the year, which are generally in prime order in July, and often ſtrike freely the ſame year without aid of hot-beds; the young ſhoots of the former year will alſo often ſtrike tolerably, eſpecially if planted in ſpring or early in ſummer, or by aid of hot-beds may be made to ſtrike root readily at any time in the ſpring or ſummer ſeaſon. By aid of a hot-bed, however, all the ſorts, both of one or two years ſhoots, may be greatly facilitated in rooting: a dung hot-bed under common frames and lights will do, though a bark hot-bed of a ſtove, &c. is conſiderably the moſt eligible and effectual, and may be readily uſed any time in ſpring and ſummer for this purpoſe; and by which aſſiſtance vaſt numbers of cuttings may be ſtruck with the utmoſt facility in a ſhort time, with but little trouble; and plants thus ſtruck in ſpring or early in ſummer, may be ſo much forwarded as to form pretty little plants the ſame year, and be fit to pot off ſeparately early in autumn. We will, however, exhibit ſeparate directions for both methods, i. e. ſtriking them in natural earth, and by hot-beds.

Firſt, by ſtriking them in natural earth: we noticed above, that the planting might be performed any time from March till Auguſt; obſerve in reſpect to this, that if you would begin in ſpring, or early in ſummer, you muſt chuſe principally the ſhoots of the former year; and if you do not begin planting till June or July, but particularly the latter month, the young ſhoots of the year will be arrived at a proper growth, and will root freely. Obſerve in chuſing the ſhoots, either of the former or ſame year, to chuſe the ſtraight clean growth, of from about two or three to four or five inches length, and as robuſt as poſſible; which diveſt of the lower leaves, two parts of three of their length, they are then ready for planting; then having ſome large wide garden-pots, or rather flat wide earthen pans, ſix inches deep, with holes at bottom to diſcharge the wet, ſuch as are uſed by the ſetting-gardeners about London, who raiſe prodigious quantities of Myrtle annually for the ſupply of the markets; fill the pots or pans with light rich mould, in which plant the ſlips or cuttings, many in each pot or pan, if required, putting them in within an inch of their tops, and about an inch or two aſunder; give directly ſome water to ſettle the earth cloſely about each plant; then either plunge the pots, &c. in a ſhallow garden-frame, and put on the glaſſes, or under oiled paper-frames, or cover each pot or pan cloſe with a low hand-glaſs, which is rather the moſt eligible for facilitating their rooting; in either method, however, obſerve to plunge the pots in the earth, and keep them cloſe covered with the glaſſes, &c. where practicable, to exclude the air, for this will promote the quick emiſſion of roots the ſame ſeaſon; remembering to afford them occaſional ſhade from the mid-day ſun, but if under oiled paper none is wanted; and give plenty of water three or four times a week at leaſt, or oftener in very hot weather; thus they will be rooted in a month or ſix weeks, which will appear by their exhibiting ſigns of growth at top; at which period inure them gradually to the full air, ſtill ſupplying them duly with water during the hot weather, whereby they will ſhoot in height; and thoſe planted early will often branch out laterally a little the ſame year, ſo as to commence pretty little plants by autumn: let them remain in the full air until October, then remove them in their pots or pans into the green-houſe, or under a good garden-frame for the winter, and in ſpring the forwardeſt in growth may be potted off ſeparately in ſmall pots; but if rather ſmall and weak, or but indifferently rooted, let them have another ſummer's growth, and pot them out ſeparately in September or ſpring following, as it ſhall ſeem proper; managing them as other green-houſe ſhrubs of ſimilar temperature, and ſhift them into larger pots annually, or according as they ſhall require.

For want of frames and glaſſes of any ſort to ſtrike the cuttings under, oiled paper-frames

frames may be uſed, which may be obtained at an eaſy expence, and are excellent for ſtriking many ſorts of cuttings; they admit the rays of light and heat ſufficiently, at the ſame time afford ſuch an agreeable ſhade that no other is required, and which is of ſuch a nature as greatly to promote the rooting of cuttings.

But Myrtle cuttings will ſometimes ſtrike in the open ground without any coverings; and if planted betimes in ſummer, either in pots or pans, as above mentioned, and plunged in a ſhady border, or the ſlips planted in the earth of ſuch a border of rich earth; and in either method plentifully ſupplied with moiſture, they will often root tolerably the ſame year, and ſhoot a little at top; though rarely make ſo good plants by autumn as thoſe forwarded in the above manner, nor near ſo ſtrong as thoſe ſtruck in the following method by aid of artificial heat.

By Aid of Hot-beds.—By the aſſiſtance of hot-beds, either that of dung, under frames and glaſſes, oiled paper-frames, or in the bark-bed in the ſtove, &c. but rather the latter; but by either method the rooting and firſt growth of the ſlips may be greatly forwarded; a bark-bed in particular in the ſtove, &c. is the moſt eligible, and effectual for this purpoſe, and in which vaſt numbers of ſlips or cuttings may be readily ſtruck, at any time from March until Auguſt, both in ſhoots of the former year, and of the ſame year's growth, from three or four to five or ſix inches long: and that thoſe ſtruck in ſpring and early in ſummer, will form fine young plants for potting off early in the proceeding autumn. However, in default of bark hot-beds, one of dung under glaſſes may ſuffice; but if furniſhed with both, give preference conſiderably to a bark-bed.

Therefore being furniſhed with pots, or rather wide pans, as before directed, filled with fine rich earth, take off a quantity of ſlips or cuttings, the moſt robuſt ſhoots; which if in ſpring or early in ſummer, thoſe of the former year muſt be choſen; and at a more advanced ſeaſon, thoſe of the ſame year will be arrived to a proper growth for this purpoſe: obſerving for either ſort to ſtrip off the under leaves, as before adviſed; then plant them in the pots or pans, as already exhibited, give a general watering, and directly plunge them in the hot-bed, affording occaſional ſlight ſhade from the fierce ſun, and water them frequently; they will thus root in a fortnight or three weeks, and advance in growth; obſerving to inure them gradually to the open air, if the temperature of the weather permits, in a ſheltered ſituation; or in a frame, if cold weather, and from thence by degrees expoſe them fully for the remainder of the ſummer, in a ſheltered place, and ſupply them duly with water in dry weather, they will be fine plants by September; and, as before obſerved, thoſe raiſed early will be then fit to pot off ſingly into ſmall pots; and the latter plantings will be fit for potting in ſpring, or autumn following; removing them all to ſhelter towards the middle or latter end of October.

In ſtriking the cuttings by the above method, if, as ſoon as they are planted and plunged in the hot bed, each pot or pan is covered cloſe with a low hand-glaſs, it will ſtill contribute to facilitate their rooting the more effectually; for being cloſe covered, it will force out roots ſooner, and prevent the cuttings from running up weak; obſerving, however, when they begin to advance at top, to remove the glaſſes.

By the above methods of artificial heat, in ſtriking Myrtle cuttings, you may make two or three plantings each ſeaſon, where large quantities are required; the firſt planting in March or April, of the beſt laſt year's ſhoots; the ſecond early in June, of the ſucceeding beſt ſhoots; or about Midſummer, or ſoon after, may plant ſhoots of the year; and in a month or ſix weeks after, the next beſt ſhoots alſo of the ſame year will be come forward, and of which may be made another plantation; plunging each planting in the bark-bed, &c. as above; thus may you have three young crops advancing in different ſtages of growth each year in ſtore-pans; ſome ready for potting off ſingly every autumn and ſpring, whereby a large ſtock may be always kept up, as is neceſſary for thoſe who raiſe them for ſale, eſpecially about London, for Covent-garden market, where amazing quantities are brought for ſale at all times of the year, which ſell from ſix-pence to half a crown per pot, according to the ſize and goodneſs of the plants.

Thoſe who propagate large quantities of theſe plants annually, ſhould always keep ſome ſtrong buſhy plants for furniſhing ſlips or cuttings for this purpoſe.

Propagation by Layers.——Such plants as are furniſhed with young bottom branches or ſhoots ſituated low enough for laying, may

be layed in ſpring, in the uſual way; every ſhoot will readily emit roots, and be fit to tranſplant into ſeparate pots in autumn.

By Seed.—Theſe may be ſowed in ſpring, in pots of light mould, and plunged in a moderate hot-bed; they will ſoon come up, which when two or three inches high, pot them off ſeparately in ſmall pots; manage them as the others, and probably as they advance in growth may diſcover ſome new varieties.

With reſpect to the general culture of all theſe ſorts of common Myrtle, they ſucceed in the open air from May until the end of October, when remove them in their pots to the green-houſe, or into a deep garden-frame under glaſſes, allowing air freely in all mild weather, by opening the glaſſes wide; giving water once or twice a week or ten days in winter, and every other day at leaſt in ſummer; and according as they advance in growth, ſhift them into larger pots, which may be neceſſary every year to one or other of them. See GREEN-HOUSE PLANTS.

In training theſe ſhrubs, obſerve, as they naturally branch out all around, ſo to be feathered quite to the bottom, in a beautiful manner, that if you deſign any ſhall form ſtandards, with buſhy heads for variety, trim off the lower ſhoots gradually ſo as to form a ſtraight clean ſtem, two or three feet high or more, then ſuffer them to branch out every way at top to form a head: but thoſe which are intended to be low and branchy quite to the bottom, ſhould have the lateral ſhoots encouraged nearly in their own way, whereby they will be feathered all the way from bottom to top, and aſſume a more picturesque appearance.

Let them afterwards for the moſt part aſſume their own natural growth, except when their heads become thin, ſtraggling, and irregular; then ſhorten with a knife ſuch ſhoots as ſhall appear proper, either in order to force out laterals to make good deficiencies, or to form regularity.

Never practiſe clipping theſe ſhrubs with garden-ſhears into globes, pyramids, &c. as ſometimes done; but let all neceſſary trimming be performed by knife, and that only in caſes of irregularity as above, for they always appear the moſt agreeable when they grow nearly according to nature.

If their heads at any time become very irregular, or thin and ſtubby, by heading down all the branches pretty ſhort in ſpring, and ſhifting them into larger pots of freſh mould, with the ball of earth about their roots, affording plenty of water all ſummer, they will all branch out again numerouſly, and form handſome full heads by the ſucceeding autumn.

Sometimes when Myrtles are become very weak ſtraggling ſhooters, with naked unſightly heads; if headed down, as above, in April or May, turned out of the pots, and plunged in a warm border of rich ſoil, giving plenty of water, they, by ſending their fibres into the freſh earth, often break out with freſh vigour, and become fine full-headed plants by the end of ſummer, when they may be taken up with balls and potted in freſh earth.

As the ſorts in general encreaſe in ſize, ſhift them into larger pots. See GREEN-HOUSE PLANTS and SHIFTING PLANTS.

*Propagation of the Stove Kinds.*

The four kinds of *Myrtus* for the ſtove, are commonly propagated by ſeeds; though, when any are pretty branchy, it may alſo be tried by layers and cuttings.

By Seed.—This is procured from abroad by the dealers, preſerved in ſand, &c. and arrives in ſpring, which ſow as ſoon after they arrive as poſſible, in pots of freſh rich mould, and plunge them in a bark-bed, they will come up the ſame ſeaſon; which, when of two or three inches height, plant out in ſeparate ſmall pots, plunge them alſo in the bark-bed, ſupply them with water, and manage them as other woody plants of ſimilar temperament.

By Layers.—The firſt ſort in particular often branch out low; lay ſome of the young ſhoots in ſpring, by ſlit-laying or wireing, &c. plunging the pots in which they are layed in the tan; they will probably be rooted in one year, though it is frequently two before they ſtrike good root, when pot them off ſeparately.

By Cuttings.——In May or June cut off ſome ſhort young ſhoots from ſuch of the plants as afford them, plant them in pots of freſh compoſt, plunge them in the bark-bed, and cover them cloſe with a low hand-glaſs, giving due refreſhments of water; they will ſoon take good root the ſame year, and be fit to plant in ſeparate ſmall pots.

In the general management of theſe ſorts, keep them always in the ſtove, except about a month

a month in the heat of ſummer, when they may be truſted abroad. Let them ſhoot nearly in their own way, keeping them, however, to upright ſtems, and ſuffer their heads to branch out according to nature, except juſt reducing very irregular ſhoots: give frequent waterings in common with other woody plants of the ſtove department, and ſhift them occaſionally into larger pots. See STOVE PLANTS.

# N.

NARCISSUS *(Narciſſus)* Daffodil.

This genus retains a numerous family of eminent, bulbous-rooted, herbaceous perennials of the flowery race, for embelliſhing the pleaſure-garden, having all large tunicated, bulbous roots, crowned with ſeveral long narrow leaves, and erect naked flower-ſtalks, riſing from about eight or ten to fifteen or eighteen inches high, each terminated by a ſpatha, protruding one or more large hexapetalous flowers, having a large cup-ſhaped nectarium in the centre.

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX, is an oblong, compreſſed ſpatha, opening on one ſide, and withering. COROLLA, ſix large, oval petals, inſerted into, and ſurrounding a large cup-ſhaped nectarium; the nectarium is monopetalous, and placed directly in the centre of the corolla, and reſembles a ſort of cup or diſh. STAMINA, ſix ſhort awl-ſhaped filaments affixed to the tube of the nectarium, and oblong antheræ. PISTILLUM, a roundiſh three-cornered germen below the corolla, long ſlender ſtyle, and trifid ſtigma. PERICARPIUM, a roundiſh, obtuſe trigonous, trilocular, trivalvular capſule, having numerous roundiſh ſeeds.

To this celebrated genus belong alſo all the ſorts of *Jonquilla*, or Jonquil.

There are about twelve ſpecies, ſome of them furniſhing a numerous train of beautiful varieties; one of the ſpecies, Common Daffodil, grows wild in England, &c. but it nevertheleſs poſſeſſes merit as a garden-flower: moſt of the others are originally of foreign growth, but are hardy enough to proſper in our flower-borders, and ſeveral of which have long adorned our gardens. All of them produce their flowers from a ſpatha or ſheath; ſome having but one, and ſome many flowers from the ſame ſpatha, though the greater part are uniflorous, but the multiflorous kinds, called *Polyanthos Narciſſus*, having ſuperior merit, are in moſt eſteem among the floriſts; but all the ſorts are very ornamental flowers.

Each flower of all the ſpecies of this genus being furniſhed with that appendage, called *nectarium*, which in theſe plants is always placed in the centre of the corolla, and which, as it in ſhape reſembles a ſort of cup or little diſh, among gardeners it is commonly, but erroneouſly called the cup; therefore in the following deſcriptions of the ſpecies, when we occaſionally mention the cup, it muſt always be underſtood the nectarium.

The ſpecies are;

1 NARCISSUS, *Pſeudo-Narciſſus.*

*Baſtard Narciſſus, or common Yellow Engliſh Daffodil.*] Hath a large, oblong, bulbous root; ſending up ſeveral long, narrow, light-green leaves, a foot long and half an inch broad, a little hollow along the middle; amidſt them, an upright flower-ſtalk, twelve or fifteen inches high; terminated by an uniflorous ſpatha, protruding one large yellow flower, having oval petals, and a bell-ſhaped, erect, golden cup or nectarium, waved, and equal in length with the corolla; flowering in March and April.

*Varieties of this are.*] Common ſingle-flowered pale yellow Daffodil—deep-yellow——golden-cupped——double-flowered——long tubed-flowered——ſhort tubed—dwarf-ſtalked.

This

This ſpecies grows wild in great plenty in many of our woods and coppices, and under hedges in ſeveral parts of England; from which places in the counties round London the herb folks bring prodigious quantities in the ſpring of the year, when in bloom, root and all, and ſell them about the ſtreets. Its commonneſs renders it of but little eſteem with many; conſidered, however, as an early and elegant flower, together with its exceeding hardineſs, and eaſy culture, are ſufficient merits to entitle it to a place in every garden.

[2]NARCISSUS *Bicolor.*

*Two-coloured Incomparable Narciſſus.*] Hath a large, oblong, bulbous root; crowned with long, narrow, dark-green leaves, twelve or fourteen inches long; an upright flower-ſtalk, about fifteen inches high, terminated by an uniflorous ſpatha, protruding one large flower with white petals, and a bell-ſhaped, ſpreading, golden nectarium, waved on the margin, and equal in length with the corolla; flowering in April.

*Varieties.*] Common ſingle-flowered——ſemi-double-flowered—double-flowered——double-flowered, with the interior petals ſome white, and ſome yellow——with ſulphur-coloured flowers.

[3]NARCISSUS *Poeticus.*

*Poetic Daffodil, or common White Narciſſus.*] Hath a large bulbous root; crowned with ſeveral long, narrow, light-green leaves, a foot in length, and near half an inch broad, a little hollow along the middle; amidſt them an upright flower-ſtalk twelve or fifteen inches high, terminated by an uniflorous ſpatha, protruding one large, expanded, nodding, pure-white flower, having a ſhort rotated or wheel-ſhaped nectarium, ſlightly crenated and fringed on the border with a purple circle; flowering in May, and is of exceeding fragrance.

*Varieties.*] With purple-cupped flowers—yellow-cupped flowers—double-flowered: all of them with entire white petals.

This ſpecies is the ancient celebrated *Narciſſus* of the Greek and Roman poets, which they ſo greatly extol for its extreme beauty and fragrance.

[4]NARCISSUS *Bulbocodium.*

*Bulbocodium, Yellow Daffodil, commonly called Hoop-petticoat Narciſſus.*] Hath a ſmall bulbous root, crowned with ſeveral narrow, ſubulate, ruſh-like leaves, ſix or eight inches long; amidſt them a ſlender, taper flower-ſtalk, ſix inches high, terminated by an uniflorous ſpatha, protruding one yellow flower, having the nectarium much larger than the petals, and very broad and ſpreading at the brim; flowering in April.

From the large ſpreading nectarium of this ſpecies, which being three or four times longer than the petals, narrow at bottom, and widening gradually to the brim, ſo as to reſemble the ſhape of ſome old-faſhioned hoop-petticoats, it obtained the name Hoop-petticoat *Narciſſus.*

[5]NARCISSUS *Serotinus.*

*Late-flowering ſmall Autumnal Narciſſus.*] Hath a ſmall bulbous root; crowned with a few narrow leaves; amidſt them a jointed flower-ſtalk, eight or nine inches high, terminated by an uniflorous ſpatha, protruding one white flower, having a ſhort, ſix-parted, yellow nectarium; flowering in autumn.

[6]NARCISSUS *Tazetta.*

*Tazetta, or Multiflorous Daffodil, commonly called Polyanthos Narciſſus.*] Hath a very large, roundiſh, bulbous root; long, narrow, plane leaves; an upright flower-ſtalk, riſing from ten or twelve inches to a foot and a half high; terminated by a multiflorous ſpatha, protruding many large, ſpreading, white and yellow flowers in a cluſter, having bell-ſhaped nectariums ſhorter than the corolla; flowering in February, March, and April, and is very fragrant.

The varieties of this are very numerous, conſiſting of about eight or nine principal ſorts, each of which having many intermediate varieties.

*Principal Varieties are,*] With entire white flowers in large bunches—with white petals and yellow nectariums—white petals and ſulphur-coloured nectariums—white petals and orange-coloured nectariums—with entire yellow flowers——yellow petals and orange coloured cups——yellow petals and ſulphur-coloured cups——double-flowered of each of theſe varieties: all which are multiflorous, or many flowers in a cluſter from each ſpatha.

Of each of theſe principal varieties are many intermediate ones, as above obſerved, varying from each other in ſome little particulars; amounting in the whole greatly above an hundred in the Dutch floriſts catalogues, each variety diſtinguiſhed by a name according to the fancy of the firſt raiſer of it; which varieties, however, and their names often varying in time and different places, it would be unneceſſary to attempt the enumerating any other here than the above principal ſtanding varieties they are all very pretty flowers, and

and make a charming appearance in the flower-borders, &c. they are alſo finely adapted for blowing in glaſſes of water, or in pots, to ornament rooms in winter.

The name *Polyanthos Narciſſus*, uſually given to this ſpecies, ſignifies Many-flowered Narciſſus, many flowers growing from the ſame ſpatha, in a cloſe head or cluſter, like a truſs of the Polyanthos Primroſe, which has alſo the name *Polyanthos*, from many flowers growing in a head. See PRIMULA.

### *Jonquil Kinds.*

There is but one ſpecies of the true Jonquil, but admits of ſeveral varieties, all of the multiflorous kind, and very pretty ſpring-flowers of delightful fragrance, and have long ornamented many curious flower-gardens.

[7]*Narciſſus Jonquilla.*

*Jonquilla, or Jonquil, ſometimes called Ruſh-leaved Daffodil.*] Hath an oblong, bulbous, brown root; ſending up ſeveral long, ſemi-taper, ruſh like, bright-green leaves; amidſt them an upright green flower-ſtalk, a foot or fifteen inches high, terminated by a multiflorous ſpatha, protruding many yellow flowers, often expanded like a radius, each having a hemiſpherical, crenated nectarium, ſhorter than the petals; flowering in April, and moſtly of a fine fragrance.

*Varieties are.*] Jonquil minor, with ſingle flowers—Jonquil major, with ſingle flowers—ſtarry-flowered—yellow and white-flowered—white-flowered—ſemi-double-flowered—double-flowered—and large double inodorous Jonquil: all of them multiflorous, the ſingles in particular, but ſometimes the doubles produce only two or three flowers from a ſpatha, and the ſingles commonly ſix or eight.

All the ſorts of *Jonquilla* have ſo fine a ſhape, ſo ſoft a colour, and ſo ſweet a ſcent, that they are ſome of the moſt agreeable ſpring flowers.

### *Leſs common Narciſſus Kinds.*

[8]NARCISSUS *Calathinus.*

*Calathinus Multiflorous Yellow Narciſſus.*] Hath a large bulbous root; crowned with long, narrow, plane leaves; and amidſt them an erect, robuſt flower-ſtalk, terminated by a multiflorous ſpatha, protruding many large, entire, yellow flowers, having a bell-ſhaped, ſlightly crenated nectarium, equal in length with the petals.

[9]NARCISSUS *Odorus.*

*Odoriferous, or Sweet-ſcented Starry Yellow Narciſſus.*] Hath a bulbous root; narrow leaves; erect flower-ſtalk, a foot or more high, terminated by a ſub-multiflorous ſpatha, protruding ſometimes but one, and ſometimes ſeveral entirely yellow flowers, having a companulated, ſix-parted, ſmooth nectarium, half the length of the petals.

[10]NARCISSUS *Triandrus.*

*Triandrous Ruſh-leaved White Narciſſus.*] Hath a bulbous root; very narrow, ruſh-like leaves; erect flower-ſtalk, terminated by an uniflorous ſpatha, protruding one ſnowey-white flower, having a bell-ſhaped, crenated nectarium, half the length of the petals, and with moſtly triandrous or three ſtamina.

[11]NARCISSUS *Trilobus.*

*Trilobate Yellow Narciſſus.*] Hath a bulbous root; narrow ruſh-like leaves; and erect flower-ſtalks, terminated by a ſub-multiflorous ſpatha, protruding ſometimes but one or two, and ſometimes ſeveral yellow flowers, having a bell-ſhaped, three-lobed nectarium, half the length of the petals.

[12]NARCISSUS *Minor.*

*Minor Yellow Winter Daffodil.*] Hath a ſmall bulbous root; plane leaves, eight or ten inches long, and more than half a one broad; an erect flower-ſtalk, terminated by an uniflorous ſpatha, protruding one nodding yellow flower, with ſpear-ſhaped petals, having an obconic, ſix-parted, waved nectarium, equal to the length of the corolla; flowering in winter, or very early in ſpring.

All theſe twelve ſpecies of *Narciſſus* are of the bulbous-rooted tribe, and univerſally perennial in root, but annual in leaf and flower-ſtalk; all of which riſing annually in ſpring, immediately from the crown of the bulb, firſt the leaves, and in the midſt of them the flower-ſtalk, one only from each root, entirely naked or leafleſs, each terminated by a ſpatha or ſheath, which opens on one ſide to protrude the flowers, and then withers; the flowers, as before obſerved, are all hexapetalous, each furniſhed with a nectarium in the centre, and are univerſally hermaphrodite; they are large and conſpicuous, appearing moſtly in the ſpring ſeaſon, generally from March or April until June, ſucceeded by ripe ſeed in July; then the leaves and flower-ſtalks decay, and the roots deſiſt from growing for ſome time; at which period of reſt is the only proper time to take up, or tranſplant the

the roots from one place to another, or to ſeparate the off-ſets; for they all multiply abundantly by off-ſet young bulbs from the main root, inſomuch that a ſingle bulb will in one or two years be encreaſed into a large cluſter of ſeveral bulbs, cloſely placed together, and which every ſecond or third year ſhould be taken up at the above period in order to be ſeparated; and each off-ſet ſo ſeparated commences a diſtinct plant, which being planted again in autumn, produces flowers the following ſummer, alike in every reſpect to thoſe of their reſpective parent bulbs. See BULBUS.

All the ſpecies are ſo hardy that they proſper in any common ſoil of a garden: obſerving, however, to allow the finer ſorts of *Polyanthos Narciſſus* in particular, principally a warm dry ſituation; all the others may be planted any where in the open dry borders and flower-beds.

The firſt ſeven ſpecies are thoſe the moſt commonly known in the Engliſh gardens; all of which produce ornamental flowers, but the *Polyanthos Narciſſus* is among the floriſts eſteemed the chief of the *Narciſſus* tribe, both on account of its mode of flowering, i. e. in a large cluſter from each ſpatha, and from the vaſt ſource of variety it affords in the different properties of its flowers; ſo that almoſt every eminent floriſt cultivates this ſpecies and its varieties with great aſſiduity, and are often particularly induſtrious in raiſing new varieties from ſeed, eſpecially the Dutch floriſts; and when any new variety is ſo obtained, it propagates itſelf plentifully by off-ſets of the root like the other ſorts, whereby the ſtock in two or three years will be greatly encreaſed.

With reſpect to the merit of the ſpecies in general as flowering plants, all the ſorts may be conſidered as ſome of the moſt beautiful of our bulbous-rooted ſpring flowers for ornamenting the borders, &c. of the pleaſure-garden; and have a very fine effect when diſpoſed in patches in aſſemblage with other bulbous flowers of the ſpring.

The bulbs or roots of all the ſorts may be had at moſt of the nurſery-gardens, and of the ſeedſmen, at the proper ſeaſon, i. e. from September until Chriſtmas, or even until ſpring.

*Method of Planting, &c. of all the Sorts.*

The beſt general ſeaſon for planting all theſe bulbs is autumn, from about the beginning or middle of September until November, in which they will flower conſiderably ſtronger, as well as furniſh a greater encreaſe of off-ſets than thoſe planted later, or not till ſpring: if, however, ſome roots are retained out of ground until February, they will ſucceed thoſe of the autumnal planting in flowering, whereby you may vary and prolong the continuance of the bloom; but theſe late-planted roots always flower weaker, ſome not at all, and at beſt with inferior beauty, and ſhorter continuance, and furniſh but a bad encreaſe of roots; therefore always conſider autumn as the proper planting ſeaſon for the principal blow.

In planting them, obſerve the following modes of diſpoſition.

Thoſe you deſign to diſpoſe in the open borders or other compartments, in aſſemblage with other bulbous flowers, &c. I ſhould adviſe them to be depoſited in little patches, of about three or four roots in each, planting them either with a blunt dibble, or hole them in with a garden trowel, four inches deep; in which mode of diſpoſition they will ſhew their flowers more conſpicuouſly and ornamental than if planted ſingly, as each patch of plants will diſplay their flowers in a cluſter, which will ſtrike the eye moſt agreeably.

When intended to plant a quantity in beds by themſelves, in order to exhibit a full bloom all together in one place, as is often practiſed to the fine *Polyanthos Narciſſus*, Jonquils, &c. have the beds four feet wide, with foot and a half, or two-feet-wide alleys between; in which beds plant the roots in rows lengthways, nine inches aſunder; planting them either with a blunt-ended dibble, or drill them in with a hoe, about four inches deep, and ſix diſtant in each row, covering them regularly with the earth, and rake the ſurface ſmoothly.

Having planted the roots in either of theſe methods, all the culture they require is to be kept clean from weeds; and they will all flower in due perfection the following ſpring and ſummer.

But the *Polyanthos Narciſſus* and Jonquil, as we formerly obſerved, being of the multiflorous kinds, and conſidered of ſuperior value and beauty; to blow them in the higheſt perfection, curious floriſts beſtow particular care in their culture: ſome prepare beds of compoſt, as for the fine hyacinths, &c. and manage

manage them in the ſame manner, particularly the *Polyanthos Narciſſus:* remark, however, that in default of ſuch prepared compoſts, &c. you need not be under any great anxiety, for they generally ſucceed very well in any good, light, rich earth of a garden, in a warm, ſunny, ſheltered ſituation, with the beds a little elevated above the common level, out of the reach of copious moiſture in winter; ſo having the ground formed into four-feet-wide beds, in which plant the roots in rows nine inches aſunder, as before directed; and in winter and early in ſpring give occaſional ſhelter of mats from cutting froſts and other inclement weather, eſpecially after the flower-buds appear above-ground.

All the ſorts of theſe bulbs, planted in either of the above methods, may be ſuffered to remain in the ground two or three years or more, unremoved; when by their being encreaſed by off-ſets into large bunches, each will ſend up ſeveral flower-ſtalks, and ſhew a large cluſter of flowers, appearing conſiderably more conſpicuous and beautiful than when the flower-ſtalks riſe ſingly: remark, however, it is proper to take up the bulbs in general every third or fourth year, in order to ſeparate the off-ſets, which in that time will be increaſed ſo greatly in number, that the bulbs preſſing cloſe againſt one another, the inner ones will be ſo much compreſſed and weakened, as greatly to impede their efforts for flowering.

But where theſe bulbs are intended for ſale, they ſhould generally be lifted once a year, or once every two years, otherwiſe, as by their growing cloſe in cluſters preſſing againſt one another, they will be flattened thereby, and rendered unſightly, and leſs ſaleable.

The only proper time of year for taking up all the ſorts is ſoon after they have done flowering, when their leaves and flower-ſtalks aſſume a ſtate of decay; at which time of lifting the bulbs, ſeparate them all ſingly, and the ſmaller off-ſets from the larger, reſerving the large roots for planting again in the principal compartments, and the ſmaller may be depoſited in nurſery beds for a year or two, to gain ſtrength, when they will become proper blowing roots; and may then be taken up at the proper ſeaſon, in order for planting where wanted.

When the roots are lifted at the above proper ſeaſon, they may either be planted again directly, or in a month or ſix weeks after; or may be cleaned and dried, and retained out of the ground in a dry room, two or three months or longer, if occaſion ſhall require; but, as before ſuggeſted, I ſhould adviſe the principal part to be committed to the earth again in autumn, i. e. in September, October, or November.

*Blowing them in Glaſſes of Water, &c. in Winter, to ornament Rooms.*

The *Polyanthos Narciſſus*, and the large Jonquills, are alſo in great eſteem for blowing in glaſſes of water, in rooms, in winter and early in ſpring, before thoſe in the open ground come into bloom; any of the other ſpecies may alſo be flowered in the ſame manner; obſerving to procure ſuch roots as were lifted at the proper ſeaſon above mentioned.

The glaſſes for this uſe are a ſort of bottle, of about two or three gill-ſize, narrow and upright, ſix or ſeven inches high, with wide mouths to fit the bulbs, one for each glaſs; and are ſold at all the glaſs ſhops. The ſeaſon for uſing them is, any time in winter, or early ſpring, from October or November till February or March: obſerving to fill them with freſh ſoft water, ſo full as the bottom of the bulb may juſt touch it; ſo place one bulb in each glaſs as aforeſaid, and place the glaſſes in any light warm room near the windows where the ſun comes: the roots will ſoon ſend out fibres downward into the water, and leaves and flower-ſtalks at top, and flower ſtrong and agreeably in the dead ſeaſon of winter, and beginning of ſpring, attended with a delightful fragrance.

The water ſhould always be kept up to the proper height in the glaſſes, adding an entire freſh ſupply every three weeks or a month.

We may ſee many of theſe bulbous-rooted plants blowed in the above manner, in great perfection, in winter and ſpring, in the ſeed-ſhops in London; particularly the *Polyanthos Narciſſus*, and fine Jonquils, Hyacinths, &c.

The ſame plants may alſo be brought to early bloom in pots. Plant the bulbs in pots of light rich earth, which place in a warm room, as directed for the glaſſes, placing them in plates of water occaſionally, when the earth wants moiſtening, and take them out again when moiſt enough; and thus they will blow at an early ſeaſon.

But ſuch as have the advantage of ſtoves, or hot-beds under glaſſes, need only carry their glaſſes or pots of bulbs thither, ſetting the former upon ſhelves, and plunging the

latter into the bark-bed, &c. they will have fine flowers from December till the end of March without much trouble.

We muſt obſerve, that to enjoy the pleaſure of this winter floral-ſcene of theſe kinds, the largeſt bulbs are always to be choſen, otherwiſe it will be impoſſible to compaſs it with any degree of perfection.

The bulbs made uſe of for this purpoſe, although they rarely ſerve for the ſame uſe again, yet they will not be loſt, but may be continued in vigour for encreaſe, provided they are taken out of the glaſſes or pots as ſoon as the flowers are gone off, and after cutting off their tops and fibrous roots, plant them in beds of mould to ſtand till the proper lifting ſeaſon, in the mean time they will there multiply by off-ſets, and thus prove a nurſery to ſupply your pots and glaſſes.

The prices of the roots of *Narciſſus* at the nurſeries and ſeed-ſhops is different according to the ſorts: they are commonly ſold by the hundred, or in proportion. The common Daffodils are cheap enough, generally two or three ſhillings a hundred; and the other uniflorous kinds, both white and yellow ſorts, ſell at from about three to ſix ſhillings per hundred roots; but the *Polyanthos Narciſſus* ſell at a greater price, generally from ten to thirty or forty ſhillings per hundred, eſpecially the fine Dutch varieties, ſome of which often ſell from one to eight or ten ſhillings per ſingle root; the Jonquils are generally from five to ten or twelve ſhillings per hundred, according to their ſize and goodneſs, and whether ſingle or double; and ſome of the largeſt double kinds for blowing in glaſſes, ſell at the rate of thirty or forty ſhillings per hundred: obſerving of the ſpecies of *Narciſſus* in general, that if you have different varieties in each parcel, the prices are generally advanced a little in proportion.

Moſt of the eminent nurſery and ſeedſmen about London import a great variety of the *Polyanthos Narciſſus* annually from Holland, the Dutch being famous for raiſing many new varieties of this ſpecies, and of all other curious bulbous-rooted flowers from ſeed, with which they ſupply this and other countries, and make us pay well for their induſtry.

However, after procuring a few roots of each ſort, you may with care greatly encreaſe the ſtock in two or three years.

*Propagation of all the Sorts.*

The propagation of all the ſorts of Narciſſus, is effected principally by their abundant off-ſets from the roots; alſo by ſeed to obtain new varieties.

By Off-ſets.—All the ſorts encreaſe plentifully by off-ſet-bulbs from the main roots annually; and the proper time for ſeparating them is in ſummer, when they have done flowering, and the leaves and ſtalks begin to decay, as obſerved of other bulbous roots; at which time the roots may either be taken up every year or two, to ſeparate the off-ſets, but ſhould not remain longer unremoved than three years, when each root will be then multiplied by its off-ſets into a large cluſter, and, as we before noticed, it is neceſſary to lift them, eſpecially the principal ſorts, to divide the increaſed parts; reſerving the main bulbs to plant, as before directed, for the ſucceeding year's bloom; and the off-ſets ſhould be ſet in nurſery-rows, drilled in three inches deep, and ſix from row to row; to remain to have one or two years growth, when they will have become large bulbs capable of producing flowers in full perfection; and being then taken up at the proper ſeaſon, may be planted in autumn following, in any place where required.

By Seed.—This mode of propagation is rarely practiſed to any but the Polyanthos Narciſſus, and that principally for the ſake of new varieties: I would obſerve, however, that this work of raiſing them from ſeed is exceedingly tedious, as it will be often ſix or ſeven years before the ſeedlings will flower in perfection; it is nevertheleſs practiſed by many curious floriſts, more particularly thoſe of Holland, who exceed all the world in their patience and induſtry in raiſing ſeedling bulbous flowers, for encreaſing the number of new varieties, which they often ſell at a high price; and the following is the method of raiſing ſeedlings of the Narciſſus kind.

The ſeed ripens in June or July, which ſow ſoon after in pots or boxes of light rich earth, half an inch deep; then place them to have only the morning ſun till October, at which time place them in a full ſunny ſituation for the winter, allowing them ſhelter in ſevere froſts. In March or April they will come up, give frequent ſprinklings of water, and occaſional ſhade from the mid day ſun at their firſt appearance; and as the warm ſeaſon

advances,

advances, move the pots to an eaſtern aſpect, to have only the morning ſun till ten or eleven o'clock. In June or July the leaves will decay, when ſtir the ſurface lightly, and clear off the decayed leaves, all weeds and moſſineſs, then ſift a little fine mould over the ſurface, half an inch thick, repeating it again in October or November; and here let them remain undiſturbed till the third year, each year repeating the above work; and in the third ſummer at the decay of the leaves, take up the bulbs, and ſeparate the largeſt, which plant in beds, by drilling, in rows, five or ſix inches aſunder, and three deep; and the ſmall bulbs you may ſcatter, mould and all, on the ſurface of another bed, and cover them two or three inches deep, with fine earth, which after a a year's growth may be tranſplanted in rows, as above.

In theſe beds let the ſeedlings remain till they ſhew flowers, and after the ſecond year's bloom you will be able to judge of their properties, when mark the good ſorts; and manage them as directed for the blowing roots.

NECTARIUM, (from *Nectar*, or honey) a part of the corolla forming a ſort of appendage to the petals of ſome flowers, and is of various ſtructures, figures, ſizes, and ſituations; is generally hollow, or with a cavity, and appropriated for containing the Nectar or honey under a fluid-form that oozes from the plant, and is ſuppoſed to ſerve ſome ſecret purpoſe of fructification.

The *Nectarium*, however, although a part belonging to the corolla, is conſidered diſtinct from the petals, as differing therefrom in point of ſtructure, form, and ſize; yet is often of the ſame texture of the petals, and often of a different nature.

But the *Nectarium* appears in a wonderful variety of forms, &c. in different genera; in ſome it is united with the petals, in others ſeparate. Its ſituation is ſometimes within, and ſometimes withoutſide of the corolla; ſometimes in the calix, and ſometimes on the germen, filaments, and antheræ. In figure, in ſome ſorts it is in form of a tube, in others like a cup or diſh; in ſome it is wide and ſpreading, often appearing like an additional petal; and in ſome is very large, equalling the whole corolla in ſize, and ſometimes larger, and very conſpicuous; and in ſome flowers it is very ſmall, frequently appearing like a pore, a point, fibres, &c. in ſome it aſſumes a horn-like appearance; ſometimes its ſits cloſe, and in ſome it is elevated upon a ſort of ſtyle, or pedunculi, &c. and in a vaſt variety of other forms.

The Nectarium therefore, in point of ſituation and figure, is exceedingly various in different genera, as before noticed, but is frequently ſituated at the baſe of the corolla; ſometimes in form of a narrow tube, as in ſome monopetalous tubular flowers, the lower part or tube being generally found to contain the *Nectar* we formerly mentioned: in many flowers its ſituation is alſo at the baſe, and ſtretch out behind very conſpicuouſly into a long tube, like a horn or a cock's-ſpur, as in lark-ſpur, naſturtium, toad's flax, columbine, balſamine, orchis, &c. ſometimes it is ſituated in the centre of the corolla, and ſhaped like a cup or a bell, as in *Narciſſus*, and in which it is frequently, but erroneouſly called the cup, in ſome of which ſpecies it is very large and conſpicuous: in ſome genera it is ſwoln like a bladder, and hollow, as in *cypripedium*, or ladies-ſlipper, in which it is ſituated in the midſt of the five petals, in which it is of ſingular ſtructure, very large, and fancied to reſemble the ſhape of a ſlipper, or wooden ſhoe. In paſſion-flowers it is ſituated in the middle of the corolla, conſiſting of many ſhort beautiful fibres, diſpoſed in rays, in three ſeries or circular rows round the ſtyle, forming a ſort of triple crown, exhibiting a ſingularly curious appearance; which is alſo the caſe of the Nectarii in many other genera.

When the Nectarium is diſtinct from the petals, it is commonly very irregular, and affords many ſingular and curious variations.

Any farther deſcription of this ſtriking appendage, or ſuperfluity of the corolla, would be unneceſſary in this place, as being ſo very different in different genera, and both its form and ſituation is attended to in diſcriminating the *characters* of the reſpective genera that are furniſhed with a *Nectarium*.

The Nectarium often furniſhes one of the eſſential marks in diſcriminating the characters of many genera.

Plants which have the Nectarium entirely diſtinct from the petals, that is, not united with their ſubſtance, are commonly poiſonous, ſuch are the *aconitum* or monk's-hood, columbine, dog's-bane, hellebore, *aſclepias* or ſwallow-wort, *nigella*, oleander, *narciſſus*, *dictamnus albus* or white dittany, and ſeveral other ſorts.

NEPETA, Nep, or Cat-mint.

The plants are herbaceous perennials for variety in the pleaſure-garden, and for medical uſe; riſing with ſlender branching ſtems, a foot or two high; garniſhed with heart-ſhaped and lanceolate leaves, and the branches terminated by verticillate ſpikes of monopetalous ringent flowers.

Claſs and order, *Didynamia Gymnoſpermia.*

*Characters.*] CALIX, is monophyllous, tubulous, and five-parted at top. COROLLA, is monopetalous, with a cylindric incurved tube, ringent or gaping at top; the upper lip roundiſh, emarginated, and erect, the under one large, roundiſh, concave, and entire. STAMINA, two long and two ſhort filaments, terminated by incumbent antheræ. PISTILLUM, a quadrifid germen, ſlender ſtyle, and bifid acute ſtigma. PERICARPIUM, none, the ſeeds lodged naked in the calix.

There are twelve or fourteen ſpecies, but not more than one common in the Engliſh gardens, viz.

NEPETA *Cataria.*

*Cataria, or Common Cat-mint.*] Hath a creeping perennial root; many upright ſquare ſtems, branching two feet high; heart-ſhaped, dentated-ſerrated, oppoſite leaves, hoary underneath, each on a long foot-ſtalk; and the branches terminated by whorled ſpikes of white ringent flowers, the under verticilli having ſhort pedicles: flowering in June.

*Varieties.*] Larger Cat-mint—ſmaller Cat-mint—narrow-leaved—blue-flowered—purple-flowered.

This ſpecies and varieties have great fragrance, partaking of mint and penny-royal; is cultivated in gardens both for medicine, and to effect variety in the herbaceous collections,

The name *Cataria*, or Cat-mint, originates from the circumſtance of the cats being ſo remarkably fond of the plant, that they eagerly repair to it, roll themſelves thereon, bite and tear it to pieces, chewing it in their mouths, and often in a ſhort time entirely deſtroy the plants. It has been by ſome obſerved, that if you raiſe this plant from ſeed, and it remains where ſowed, the cats will not meddle with it, but if by ſlips, or if tranſplanted, they will ſoon deſtroy it. Whence proceeds the ſaying——

If you ſet it, the cats will eat it;
If you ſow it, the cats will not know it.

This, however, does not always hold good invariably.

It grows naturally in England by hedge-ſides, and on the ſides of banks, but it has been long admitted an inhabitant of gardens, both for its ſingularity, and for medical uſe.

Its propagation is by ſeed, by parting the roots, and by ſlips or cuttings.

By Seed.——Sow it either in autumn, or early in ſpring, in any bed or border of light earth, and rake them in; and when the ſeedlings are two or three inches high, plant them out in nurſery-beds to remain till autumn, and then tranſplant them where they are remain.

By Parting the Roots.——In autumn or ſpring divide the roots into ſlips, which, being planted ſeparate, will ſoon become good plants.

By Slips or Cuttings of the Branches.—In April, May, or June, ſlip or cut off a quantity of young ſhoots, plant them in the ſhade, and ſupply them with water, they will become good plants by autumn.

NERIUM, *Oleander*, or Roſe-Bay.

This genus comprehends beautiful ever-green flowering ſhrubs for the green-houſe and ſtove, of upright branchy growth, adorned with long, ſpear-ſhaped, ſtiff, ever-green leaves; and large monopetalous, funnel-ſhaped, quinquepartite, nectarious flowers, in cluſters from the ſides and ends of the branches of very ornamental appearance.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX, is acutely five-parted, ſmall and permanent. COROLLA, is monopetalous and funnel-ſhaped, a ſhort cylindric tube, having the upper part large and divided into five broad, obtuſe, oblique ſegments, and a nectarium terminating the tube, being divided into many hair-like parts, arranged in a coronated form. STAMINA, five very ſhort, awl-ſhaped filaments, terminated by arrow-pointed, connivent antheræ, ending in long threads. PISTILLUM, a roundiſh bifid germen, cylindric ſtyle, and truncated ſtigma. PERICARPIUM, two long, taper, acuminated, univalvular pods, furniſhed with numerous oblong ſeeds, placed *imbricatum*, and crowned with down.

There are about four ſpecies, but not more than one common in the Engliſh gardens, which is the moſt beautiful of all the ſorts, and admits of ſeveral elegant varieties.

NERIUM, *Oleander.*

*Common Oleander.*] Riſes with an upright woody ſtem, branching ſix or eight feet high, having a purple or green bark in different ſorts; long, ſpear-ſhaped, ſtiff-leaves, from about three to five or ſix inches long, and one broad, placed ternate or by threes round the branches; and at the axillas and ends of the ſhoots large looſe bunches of very ornamental flowers of different colours and properties in the varieties. Flowering in July and Auguſt.

*Varieties.*] Red-flowered Oleander—ſcarlet-flowered—white-flowered—broad-leaved double-flowered—ſtriped double-flowered—ſtriped-leaved.

Some of theſe varieties are in ſome authors ranged as different ſpecies; they, however, are only varieties of the above ſpecies of *Nerium Oleander.*

This ſpecies and varieties are not only fine ever-greens, but produce large cluſters of exceeding ornamental flowers: the double-bloſſom kinds in particular have ſuperior beauty, the flowers being very large, and the corolla multiplied in ſeveral ſeries, having ſome reſemblance to middling double roſes; are numerous, very conſpicuous, and fragrant, continuing in ſucceſſion a month or two in full luſtre.

They are exotics from the iſland Crete and India, but all the varieties are hardy enough to ſucceed in the open air here in ſummer, and in a green-houſe in winter.

Obſerve, however, the double-flowered kinds being rather of a more tender temperature than the ſingles, that they generally flower the moſt perfectly when indulged with a ſtove, even if only placed therein, or in a glaſs-caſe, about the time of year they are expected to make an effort for flowering, and their flowers will continue longer in beauty; often exhibiting a ſucceſſion of elegant flowers from July until October.

Let all the ſorts be potted in light rich compoſt, and move them into the green-houſe, &c. in autumn, at the approach of cold weather. Supply them with water once a week in winter, or oftener according as they ſhall ſeem to require, but give more frequent waterings in ſummer, in proportion to the heat and drought of the ſeaſon; and according as they advance in ſize, ſhift them into larger pots of freſh mould: their further general culture is as directed for other ſhrubby green-houſe exotics.

Theſe plants are cultivated at all the nurſeries for ſale.

*Their Propagation.*

Their propagation is by layers, cuttings, and by ſuckers from the root.

By Layers.—This may be performed any time from March until May, but the earlier the better; and the youngeſt lower branches are to be choſen; which lay by ſlit-laying: give plenty of water all ſummer as they ſhall require, and they will be moſtly rooted by the following autumn; but by plunging the pots in which they are layed, in a bark-bed, the rooting of the layers may be greatly forwarded: when properly rooted tranſplant them into ſeparate pots.

By Cuttings.—In ſpring or the early part of ſummer, take off cuttings of the young ſhoots, five or ſix inches long and plant them in large pots of rich mould, which place under glaſſes, and give water and ſhade occaſionally: but if plunged in a bark-bed it will promote and forward their rooting more effectually.

By Suckers.—Suckers often ariſe from the bottom, ſometimes furniſhed with roots, but if not, give each a ſmall ſlit at the loweſt part; then apply freſh mould around it, and fibres will be emitted by the end of ſummer; then take them off and pot them ſeparately.

NICOTIANA, Tobacco-plant.

This genus of plants are tall herbaceous annuals of America, where they are cultivated in vaſt quantities for their leaves, of which is prepared that well-known commodity called *Tobacco*; and are raiſed here in many gardens for variety, which they effect moſt agreeably in their upright growth, and noble large foliage; they riſing each with an upright ſtrong ſtem, from three to ſix or eight feet high, branchy at top; ornamented with large oblong ſimple leaves, from about ten or twelve inches to a foot and a half long, and proportionally broad; and monopetalous infundibuliforme flowers terminating all the branches plentifully in looſe bunches.

Claſs and oder, *Pentandria Monogynia.*

*Characters.*] CALIX, is monophyllous, five-parted and permanent. COROLLA, is monopetalous, infundibuliforme, having a long tube, ſpreading above, there terminating in five parts. STAMINA, five long ſubulate filaments, and oblong antheræ. PISTILLUM, an oval germen, long ſlender ſtyle, and

and capitated emarginated ſtigma. PERICARPIUM, an oval, furrowed, bilocular capſule, opening at top, and numerous kidney-ſhaped ſeeds.

Tobacco was introduced into Europe in the year 1560, diſcovered firſt in the iſland Tobago in America, and by the natives is called *Tobac*, hence the Engliſh appellation Tobacco; but the generic name *Nicotiana* is derived from one Monſ. Nicot, who firſt introduced the ſeed of the plants into the European gardens.

There are about ſeven ſpecies, but the moſt remarkable ſorts known in the Engliſh gardens, are the two following.

[1]NICOTIANA *Tabacum.*

*Tabacum, or Common Virginia Tobacco.*] Hath fibrey roots; an upright, round, ſtrong ſtem, riſing from about five or ſix to eight or nine feet high, dividing near the top into branches; very large, ſpear-ſhaped oval, ſeſſile, decurrent leaves, from ten to eighteen inches long, and half as broad; and the ſtem and branches terminated by looſe panicles of acute pale-red flowers.

*Varieties.*] Great broad-leaved—narrow-leaved.

[2]NICOTIANA *Ruſtica.*

*Ruſtic Hardy Engliſh Tobacco.*] Hath a fibrey root; an upright firm ſtem, riſing three or four feet high; large, oval, entire leaves, having foot-ſtalks; and the ſtem terminated by ſmall looſe panicles of yellowiſh-green obtuſe flowers.

Theſe plants are of the annual tribe; natives of moſt parts of America, but tolerably hardy, ſo as to proſper in our gardens as in their native ſoil: the firſt ſort, however, is rather a little tender while young, requiring generally to be raiſed and forwarded in a hot-bed until May; but the ſecond ſpecies is exceeding hardy, and was the ſort firſt introduced into the Engliſh gardens; and being ſo hardy as to ripen great plenty of ſeeds freely every year, and that from the ſcattered or ſelf-ſown ſeeds in autumn; the plants riſe plentifully the following ſpring without trouble, as if natives of England: from which circumſtances it is often called Engliſh Tobacco. The firſt ſpecies, however, is the fineſt plant, both in its procerity of growth, largeneſs of the leaves, and beauty of its flowers.

They flower here in July and Auguſt: the flowers are collected into cluſters, each flower is of one funnel-ſhaped petal, ſpreading and five-parted above; continuing in ſucceſſion until the end of ſummer; ſucceeded by ripe ſeeds in autum.

The ſeeds of theſe plants are very ſmall, generally about 1000 in each capſule, and the whole produce of a ſingle plant is eſtimated at 360,000.

With reſpect to the merit of theſe ſpecies in this country as garden-plants, they are cultivated in many curious gardens, as ornamental annuals for the pleaſure ground, but more particularly the firſt ſpecies, which obtaining a fine majeſtic ſtature, adorned with moſt luxuriant leaves, and large cluſters of delicate red flowers terminating all the ſhoots; they in the whole exhibit an elegant appearance in autumn. The ſecond ſort has alſo merit enough to recommend it for admittance in a collection in aſſemblage with the others, &c. to effect a greater variety. Both the ſorts are alſo cultivated in ſome gardens for uſe, the leaves are the uſeful part; are in perfection early in Auguſt, juſt when they come into flower, and before the under-leaves begin to wither.

As both the ſpecies periſh annually in winter, a freſh ſupply muſt be raiſed every ſpring.

### *Their Propagation.*

Their propagation is by ſeed annually in March or April, the firſt ſort in a hot-bed, the ſecond in the natural ground.

Firſt Sort.—This being rather a little tender whilſt young, in order to have it brought to perfection as ſoon in the ſummer as poſſible, it is proper to ſow the ſeed in a moderate hot-bed in March or April, covering them near a quarter of an inch deep: they will ſoon come up; allow them freſh air daily, and occaſional waterings; managing them as directed for annuals of ſimilar temperature, ſuch as *chryſanthemum*, African marigolds, &c. and in May or early in June, when the ſeedlings are from about three to ſix inches high, plant them out in moiſt weather, in the open ground: thoſe deſigned for ornament, plant ſingly in the different compartments of the pleaſure-garden, and thoſe intended for uſe may be ſet in rows any where, three feet aſunder; as ſoon as planted give a good watering, and repeat it occaſionally till the plants have got freſh root; and they will ſoon ſet to growing luxuriantly, ſo as to acquire their full ſtature in Auguſt, and continue in beauty till October.

Second

Second Sort.—This ſort being of a hardier nature, you may ſow the ſeeds in any bed or border in ſpring, and rake them in lightly; they will readily come up: when the plants are three inches high, plant them out where they are to remain; or may ſow the ſeed in patches to remain, and thin the plants to one in each patch.

NIGELLA, *(Nigella)* Fennel-flower, or Devil-in-a-Buſh.

This genus conſiſts of hardy, herbaceous, annual flowers for the pleaſure-garden; riſing with upright branchy ſtalks a foot and a half high, adorned with multifid or finely-divided leaves, reſembling thoſe of fennel or dill; and with all the branches terminated by large ſpreading pentapetalous flowers ſingly; and as ſome of the plants being of buſhy growth, and each flower having five or ten long horn-like ſtyles and capſules, and which in ſome ſpecies are cloſely ſurrounded at the ſides and top, by a large, leafy, finely-divided involucrum, forming a ſort of buſh as it were around them; hence originated the ſtrange name, Devil-in-a-Buſh.

Claſs and order, *Polyandria Pentagynia.*

*Characters.*] CALIX, none, only ſome long, finely-multifid, floral leaves, appearing like a perianthium, or a ſort of involucrum. COROLLA, five oval, plane, obtuſe, ſpreading petals, contracted at the baſe; and eight very ſhort bilabiated nectaria placed in a circle. STAMINA, numerous ſhort ſubulate filaments, and compreſſed erect antheræ. PISTILLUM, five or ten oblong, convex, erect germina, ending in the ſame number of very long, awl-ſhaped, revolute, permanent ſtyles, and ſtigmas growing longitudinally. PERICARPIUM, five or ten oblong, compreſſed, accuminated capſules, connected by their inner ſide, and filled with numerous angular rough ſeeds.

There are about five ſpecies, all annuals, remarkable for ſome having five ſtyles, and ſome ten.

[1]NIGELLA *Damaſcene.*

*Damaſcene Five-ſtyled Nigella.*] Riſes with an upright ſtem, branching a foot and half high; garniſhed with finely-multifid leaves, the ſegments long, very narrow and numerous; and large flowers ſurrounded by a long leafy involucrum; and hath five horn-like ſtyles.

*Varieties.*] Common pale-blue-flowered—with white flowers—with double flowers, of both kinds.

[2]NIGELLA *Hiſpanica.*

*Spaniſh Ten-ſtyled Blue Nigella.*] Riſes with an upright branchy ſtem, a foot and a half high; garniſhed with multifid leaves, having broader ſegments; and each branch and ſhoot terminated by one very large blue flower, having ten ſtyles of equal length with the corolla.

*Variety.*] With double flowers.

[3]NIGELLA *Sativa.*

*Sativous Five-ſtyled, White, Ægyptian, Nigella.*] Riſes with an erect branchy ſtem, about a foot and a half high; ſhorter, multifid, ſomewhat-hairy leaves; and each branch terminated by one large white flower, having five ſtyles; ſucceeded by roundiſh prickly capſules.

*Varieties.*] Double-flowered—dwarf-ſtalked—ſweet-ſcented.

[4]NIGELLA *Orientalis.*

*Oriental Ten-ſtyled Yellow Nigella.*] Riſes with an upright ſtem, branching a foot and a half high; long finely-multifid leaves; and at the ends of the branches ſmall yellow flowers, having ten ſtyles, longer than the corolla.

[5]NIGELLA *Arvenſis.*

*Arvenſe, Five-ſtyled, Blue, German Nigella.*] Riſes with a ſlender branchy ſtem, about a foot high; very finely-multifid leaves; and pale-blue naked flowers ſingly, having entire petals, and five ſtyles; ſucceeded by large turbinated capſules.

All theſe five ſpecies are annual, riſing from ſeed in ſpring, and totally periſh in autumn, after having flowered and perfected their ſeeds.

They all flower here in July and Auguſt, the flowers are moderately large, univerſally hermaphrodite, and conſiſt each of five oval plane petals; very long, revolute, permanent ſtyles; ſucceeded by ſeveral oblong compreſſed capſules, all united, each terminated by the permanent ſtyle like horns, generally bending different ways; and each capſule filled with numerous ſeeds, ripening in autumn.

The plants are all very hardy, and grow freely any where in the open compartments.

All the ſorts may be employed in the pleaſure-garden, as plants of variety and ornament in the collection of hardy annuals; but the firſt two ſorts, and varieties, are the moſt commonly known in the Engliſh gardens, and are generally the moſt ornamental in the ſize and beauty of their flowers: obſerving of all the

ſorts, that the double flowered varieties are to be preferred for general culture; all of which being diſpoſed in patches, ſowing the ſeeds at once where they are to remain to flower, they will exhibit a pretty variety in aſſemblage with other annuals.

*Their Propagation, &c.*

Their propagation is by ſeed in the open borders, &c. in March and April: or if ſome are ſowed in autumn, and one or two ſowings performed in ſpring, the autumnal-ſowed plants will flower ſtrong and earlier, and will be ſucceeded in bloom by the ſpring-ſowings, whereby the ſeaſon of flowering will be greatly prolonged.

Sow the ſeed in patches about the borders, at once where you deſign they ſhall flower, for they rarely ſucceed by tranſplantation, covering it near half an inch deep; and when the plants are come up an inch or two high, thin them where too cloſe, to three in each patch, and keep them clean from weeds is all the culture they require; and they will all flower at the proper ſeaſon, and produce plenty of ſeed for future propagation.

As all the ſorts periſh totally in winter, a freſh ſupply muſt be raiſed annually from ſeed, as above.

NURSERY, a moſt uſeful diſtrict of gardening, appropriated for the raiſing and nurſing all ſorts of trees, ſhrubs, and herbaceous plants to a proper growth, for ſupplying and recruiting the different gardens, orchards, plantations, &c.

In the Nurſery-garden are raiſed all the different ſorts of fruit-trees, and fructiferous ſhrubs, by the methods directed for each ſort under their proper genera, nurſing and training them up to a proper ſize and growth for planting in the garden or orchard, where they are finally to remain to produce their fruit.

Likewiſe in the Nurſery is raiſed the vaſt train of foreſt-trees, hardy ornamental trees, and ſhrubs in general, both deciduous and ever-greens of all thoſe kinds, and training them up to a proper ſize for the purpoſes for which they are deſigned in the plantations and pleaſure ground.

And in the Nurſery may alſo be raiſed all the ſorts of hardy herbaceous plants, both fibrous-rooted, bulbous, and tuberous-rooted kinds, for adorning the pleaſure-garden, medical uſe, &c.

All ſorts of the above kinds may be readily raiſed together in the ſame Nurſery in ſeparate compartments.

A Nurſery thus furniſhed with the different ſorts of all kinds of trees, ſhrubs, and herbaceous plants, will prove an inexhauſtible ſource of accommodation both for private and public uſe.

The raiſing or propagation of the numerous kinds is performed by various methods, as by ſeed, ſuckers, layers, cuttings, ſlips, off-ſets, parting the roots, grafting, budding; each of which methods as directed under their proper heads; as alſo in the reſpective articles under their proper genera: and after being raiſed by either of the above methods, and ſtationed in Nurſery-rows, they are to remain until they have acquired a proper growth for their reſpective uſes, then to be tranſplanted into the garden, orchard, plantation, &c. where they are deſigned finally to remain, to effect the ſeveral purpoſes for which they are calculated, either for uſe, ornament, or variety; obſerving, that as a recruit of ſome or other of the various ſorts will be required to be drawn off every year, to ſupply the different gardens and plantations, a freſh ſupply of young plants ſhould alſo be raiſed accordingly every year in the Nurſery, of moſt of the various kinds, ſo as to have this diſtrict always fully ſtocked with all kinds in ſeveral different degrees of growth; ſome in ſeed-beds, others tranſplanted in Nurſery-rows; ſome one year, others two, three, or ſeveral years: all of which ſhould be well attended to, both in private and public Nurſeries, that there may be a ſufficiency of plants of all ſorts for furniſhing every different department of gardening as they ſhall be occaſionally wanted.

In the public Nurſery-gardens they have alſo convenient green-houſes, glaſs-caſes, and ſtoves, with their proper appendages, for raiſing the tender exotics from the warmer parts of the world; each of which departments are always ſtationed in the warmeſt and moſt ſunny ſituation, having their front directly facing the ſouth, to have all poſſible benefit from the ſun's influence; and each principal department having its different appendages, as aforeſaid, which are ſmaller departments of frame-work, ſaſhed and glazed, either adjoining to the main ones, or detached; ſerving as ſeminaries or Nurſeries for raiſing and nurſing the various tender plants to a proper growth for furniſhing the other larger conſervatories.

Thus

Thus a Nurſery ground furniſhing all ſorts of plants of different temperatures, will prove a moſt valuable department of gardening, and its various growths will afford the moſt agreeable ſource of variety at all ſeaſons, which to many will appear as ornamental and deſireable as the moſt elegant pleaſure-ground or flower-garden.

*It's Extent, Soil, Situation, &c.*

With reſpect to the proper extent or dimenſions of a Nurſery, whether for private uſe, or for public ſupply, it muſt be according to the quantity of plants required, or the demand for ſale: if for private uſe, from a quarter or half an acre to five or ſix, may be proper, which muſt be regulated according to the extent of garden-ground and plantations it is required to ſupply with the various ſorts of plants; and if for a public Nurſery, not leſs than three or four acres of land will be worth occupying as ſuch, and from that to fifteen or twenty acres, or more, may be requiſite, according to the demand, though ſome occupy forty or fifty acres in Nurſery-ground.

In the neighbourhood of London, for eight or ten miles round, there are a great number of extenſive public Nurſeries, moſt beautifully furniſhed with a prodigious variety of all ſorts of trees, ſhrubs, and herbaceous plants, of many different degrees of growth, for ſupplying noblemen and gentlemens gardens and plantations, for ſome hundreds of miles diſtant at home and abroad; as alſo all ſorts of ſeeds. Moſt of which Nurſeries are alſo furniſhed with all proper green-houſes, glaſs-caſes, ſtoves, &c. for the raiſing all kinds of curious tender exotics for public ſupply.

With regard to ſoil for a Nurſery, the nature and quality of this, without all diſpute, requires our particular attention. The Nurſery-men generally prefer a loamy ſoil of a moderately-light temperament, if poſſible, ſuch as in moſt of the Nurſery-grounds around London: however, a Nurſery may be of any fat moderately light land, that is fifteen or eighteen inches depth of good working ſtaple, but if two or three ſpades deep it will be the greater advantage; and where there is ſcope of ground to chuſe from, always prefer that where there is a good depth, and naturally rich or fat ſoil, for the ſoil of a Nurſery cannot be too good, notwithſtanding what ſome advance to the contrary; for if the ſoil prove poor and lean, the plants raiſed thereon will be languid, weak, and ſtunty; and no remedy, how artful ſoever, will be able to rectify their conſtitution, eſpecially all the tree-kinds: whereas thoſe raiſed in a good fat ſoil always aſſume a free growth, and advance with ſtrength and vigour. It is not abſolutely requiſite, however, that the ſoil ſhould be exceedingly rich, nor over carefully manured, a medium between the two extremes is beſt. A good freſh fat ſoil, ſuch as any good paſture, which having the ſward trenched to the bottom, is excellent for the growth of trees; any good fat ſoil of corn-fields is alſo extremely proper; or any other good ſoil of the nature of common garden-earth is alſo very well adapted for a Nurſery.

As to ſituation; if this is rather ſomewhat low it will be the better, becauſe it is naturally warmer, and more out of the power of cutting and boiſterous winds than a higher ſituation; though if it happens where ſome parts of the ground is high and ſome low, it may be an advantage, the better to ſuit the nature of the different plants. It it alſo of ſingular advantage to have a Nurſery-ground fully expoſed to the ſun and free air, and, if poſſible, where there is the convenience of having water for the occaſional watering of ſeedlings, and ſome newly tranſplanted plants.

And as to a Nurſery for private uſe, with regard to its place of ſituation, reſpecting the other garden diſtricts, that, where there is room, it may either be entirely detached, or may be ſomewhat contiguous to the outer boundaries of the ſhrubbery plantations of the pleaſure-ground, and ſo contrived as to lead inſenſibly into it by winding walks, ſo as to appear part of the garden.

*It's Fences, Preparing and Dividing the Ground.*

A fence round the whole ground is neceſſary: this may either be a hedge and ditch, or a paling; the former is the cheapeſt, and in the end the moſt durable; though in ſome places where hares and rabbits abound, paling fences at firſt are eligible, for preſerving the Nurſeries from the depredations of thoſe animals, which often do great miſchief to the young plants, by barking and cropping them: a good hedge-and-ditch-fence, however, may be made very effectual againſt the inroads of both men and brutes; and the moſt eligible plants for this purpoſe is the haw-thorn; for the method of raiſing of which, and forming a

proper hedge of them, ſee CRATÆGUS *Oxyacantha* and HEDGES.

The ground muſt then be all regularly trenched one or two ſpades deep, according as the natural depth of the ſoil will admit, for by no means dig deeper than the natural good ſoil, let it be either one, one and a half, or two ſpades deep; obſerving the ſame general method as directed under the article *Digging by Trenches*; ſee DIGGING.

Then, having trenched the ground, proceed to divide it by walks into quarters, and other compartments; a principal walk ſhould lead directly through the middle of the ground, which may be from five to eight or ten feet wide, according as it ſhall ſeem proper for uſe or ornament, having a broad border on each ſide: another walk ſhould be carried all round next the outward boundary, four or five feet wide, leaving an eight or ten-feet border next the fence all the way; then may divide the internal part by croſs walks, ſo as to form the whole into four, ſix, or eight principal diviſions, which are commonly called quarters.

*Sowing and Planting this Department with the proper Seeds, Plants, &c.*

One or more of the diviſions muſt be allotted for a ſeminary, i. e. for the reception of all ſorts of ſeeds, for raiſing ſeedling plants to furniſh the other parts; therefore divide this ſeminary-ground into four-feet-wide beds, with foot-wide alleys at leaſt between bed and bed: in theſe beds ſhould be ſowed ſeeds, &c. of all ſuch trees, ſhrubs, and herbaceous plants as are raiſed from ſeed; and which ſeeds conſiſt of the various ſorts of kernels and ſtones of fruit, to raiſe ſtocks for grafting and budding; ſeeds of foreſt-trees, ornamental trees, ſhrubs, &c. and ſeeds of numerous herbaceous perennials, both of the fibrous-rooted and bulbous-rooted tribe; the ſowing ſeaſon is both ſpring and autumn, according to the nature of the different ſorts, which is fully illuſtrated under their proper genera; and when the young tree and ſhrub ſeedling-plants ſo raiſed, are one or two years old, they are to be planted out in Nurſery-rows into the other principal diviſion; but many kinds of herbaceous plants require to be pricked out from the ſeed-beds, when but from two to three or four months old, as directed for each under their own reſpective heads. On the other hand, moſt kinds of bulbous ſeedlings will not be fit for planting out in leſs than one or two years.

Another part of the Nurſery-ground ſhould be allotted for ſtools of various trees and ſhrubs, for the propagation by layers, by which vaſt numbers of plants of different kinds are propagated. Theſe ſtools are ſtrong plants of trees and ſhrubs, planted in rows three or four feet diſtance every way, and ſuch of them as naturally riſe with tall ſtems, are, after being planted one year, to be headed down near the ground, to force out many lower ſhoots conveniently ſituated for laying. See LAYERS and STOOLS.

The other principal diviſions, therefore, of the Nurſery-ground, is for the reception of the various ſorts of ſeedling-plants from the above ſeminary-quarters; alſo for all others that are raiſed from ſuckers, layers, cuttings, &c. there to be planted in rows from one to two or three feet aſunder, according to their natures: obſerving to allow the tree and ſhrub-kinds treble the diſtance of herbaceous perennials. Of the tree and ſhrub kinds ſome are to be planted for ſtocks to graft and bud the ſelect ſorts of fruit-trees upon, and other choice plants, which are uſually propagated by thoſe methods; others are trained up entirely on their own roots without budding and grafting, as in moſt foreſt and other hardy tree kinds; as alſo almoſt all the ſorts of ſhrubs: particulars of all which are exhibited, each under its proper genus. Here they are to remain to have two, three, or ſeveral years growth, according as they ſhall require for the ſeveral purpoſes for which they are deſigned in their future ſituations in the garden, &c. which is directed in their reſpective cultures.

*The Methods and Seaſons for Raiſing and Tranſplanting the various Plants of this Department.*

With regard to the manner of performing the various methods of propagation for raiſing the numerous Nurſery-plants, is fully exhibited alſo under the following heads, in the courſe of this work: *ſowing ſeeds—layers—cuttings—ſuckers—ſlips—off-ſets—parting roots—grafting—inoculation.* And the ſorts that are uſually propagated by either of thoſe methods, are pointed out under their ſeveral reſpective heads, with particular directions of the ſeveral ways each method is performed on the different kinds.

The ſeaſon for performing the works of ſowing, planting, &c. is different in different kinds,

kinds, but autumn and ſpring are the principal ſeaſons.

Some ſorts require to be ſowed in autumn, others not till ſpring, which is particularly explained for the various ſorts under the articles themſelves.

And as to planting or tranſplanting, the principal ſeaſon is from October until March, or even until April for tender kinds, eſpecially many of the ever-green tribe; but all hardy trees and ſhrubs may be tranſplanted any time in winter, in open mild weather from October until March, as juſt obſerved; and for the tender kinds of ever-greens, &c. early in autumn, or not till ſettled weather in ſpring, is the proper time to remove theſe ſorts.

But as to hardy herbaceous fibrous-rooted plants, they may be tranſplanted almoſt any time in autumn or ſpring; even many ſorts in ſummer, when planting them out from the ſeminary: obſerving, however, autumn and ſpring is the proper planting-ſeaſon for older or larger plants; and which are alſo the only proper ſeaſons for dividing or ſlipping the roots of all theſe kind of plants for encreaſe.

And for bulbous-rooted kinds, and all ſuch tuberous roots whoſe leaves decay in ſummer, the proper ſeaſon for planting or tranſplanting them is from May or June until the beginning of Auguſt, when their flower-ſtalks decay, which in ſome ſorts happens early and ſome late in the ſummer; but as ſoon as it happens in the different ſorts, is the only proper time to remove all thoſe kind of plants when neceſſary, as alſo to ſeparate their off-ſets for encreaſe; and which may either be planted again directly, or kept out of ground one, two, or ſeveral months, though it is proper to plant the principal part again in autumn, unleſs where any is to be retained for ſale.

Succulent-perennials may be tranſplanted almoſt any time from March or April until Auguſt or September, which is the beſt ſeaſon for removing theſe kinds, and moſt kinds of ſucculent cuttings, ſucceed beſt when planted in ſummer.

### *General Mode of arranging the Plants of this Department.*

In the diſtribution of all the various ſorts of plants in in the Nurſery, let each ſort be ſeparate: the fruit-trees ſhould generally occupy ſpaces by themſelves; the foreſt-trees, &c. ſhould alſo be ſtationed together; all the ſhrub-kind ſhould alſo be ranged in ſeparate compartments; allot alſo a place for herbaceous perennials; a warm place ſhould likewiſe be allotted for the tender kinds, and incloſed with yew hedges, or a reed hedge, &c. in which compartments you may ſtation all ſuch plants that are a little tender whilſt young, and require occaſional ſhelter from froſt, yet are not ſo tender as to require to be houſed like green-houſe plants, &c. ſo that in ſuch compartments there may alſo be frames of various ſizes, either to be covered occaſionally with glaſs-lights, or with mats, to contain ſuch of the more choice of the above tender kinds in pots, to be nurſed up a year or two, or longer, with occaſional ſhelter, till hardened gradually to bear the open air fully.

The arrangement of all the ſorts in the open grounds, muſt always be in lines or Nurſery-rows, as we formerly obſerved, to ſtand till arrived at a proper growth for drawing off for the garden and plantations; placeing the fruit-tree ſtocks, &c. for graſting and budding upon, in rows two feet aſunder, if for dwarfs; but ſtandards two feet and a half, and a foot and half in the lines (ſee STOCKS); though after being grafted and budded, they then commencing fruit-trees, &c. that if they are to ſtand to grow to any large ſize, they ſhould be allowed the width of a yard between the rows. Foreſt-trees ſhould alſo be placed in rows from two to three feet aſunder, and half that diſtance in the rows; varying the diſtance both ways according to the time they are to ſtand: the ſhrub kind ſhould likewiſe be arranged in rows about two feet aſunder, and fifteen or eighteen inches diſtant in each line; and as to herbaceous plants, they ſhould generally be diſpoſed in four-feet-wide beds, in rows from ſix to twelve or eighteen inches aſunder, according to their nature of growth, and time they are to ſtand.

By the above arrangement of the various ſorts of hardy trees, ſhrubs, and herbaceous plants, in rows at thoſe ſmall diſtances in the Nurſery, a prodigious number of plants are contained within a narrow compaſs, which is ſufficient room, as they are only to remain a ſhort time; and that by being thus ſtationed in a little compaſs, they are more readily kept under a proper regulation for the time they are to remain in this department.

But in the public Nurſeries they often plant many kinds of ſeedling-trees and ſhrubs in much cloſer rows at firſt planting out, than the diſtances above preſcribed, not only in order to huſband the ground to the beſt advantage, but by ſtanding cloſer, it encourages

the ſtem to ſhoot more directly upward, and prevent them expanding themſelves much any where but at top, as for inſtance, many ſorts of ever-greens that are but of ſlow growth the firſt year or two, ſuch as the pine-trees, firs, and ſeveral others; which the Nurſery-gardeners often prick out from the ſeminary, firſt into four-feet-wide beds, in rows lengthways, ſix inches aſunder; and after having one or two years growth here, tranſplant them in rows a foot aſunder; and in a year or two after give them another, and final tranſplantation in the Nurſery, in rows two or three feet aſunder, as obſerved above; and by theſe different tranſplantings, it will encourage the roots to branch out into many horizontal fibres, and prepare them better for final tranſplantation, which is the more particularly neceſſary in ſeveral of the pine and fir kinds, and ſeveral other ever-greens, as is more fully exhibited under their proper genera.

With reſpect to the different methods of planting the various ſorts of Nurſery-plants, after being raiſed either by ſeed, layers, cuttings, &c. it is performed in ſeveral ways to different ſorts; ſome are pricked out by dibble, others are put in by the ſpade, either by trenches, ſlitting-in, trenching, or holing; and ſome are drilled in by a ſpade or hoe.

As to moſt of the tree and ſhrub-kind, ſometimes the young ſeedling-trees and ſhrubs are pricked out from the ſeminary by dibble; ſometimes they are put in by the ſpade in the following methods: firſt, having ſet a line to plant by, ſtrike the ſpade into the ground with its back cloſe to the line, and give another ſtroke at right angles with it; then ſet a plant into the crevice made at the ſecond ſtroke, bring it cloſe up into the firſt-made crevice even with the line, and preſs the mould cloſe to it with the foot; then proceed to plant another in the ſame way, and ſo proceed till all is planted. A ſecond method is for plants with rather larger roots: ſtrike the ſpade down with its back cloſe to the line, as aforeſaid, and then with a ſpade cut out a narrow trench, cloſe along the line, as practiſed in planting box-edgings (ſee BUXUS), making the ſide next the line perfectly upright; then placing the plants upright againſt the back of the trench cloſe to the line, at the proper diſtances, before mentioned; and as you go on, trim in the earth upon their roots: and when one row is thus planted, tread the earth gently all along cloſe to the plants; and then proceed to plant another row. A ſecond method of planting-out ſmall tree and ſhrub plants is, having ſet the line as above, then turning the ſpade edgeways to the line, caſt out the earth of that ſpit, then a perſon being ready with plants, ſet one in the cavity cloſe to the line, and directly taking another ſuch ſpit, turn the earth in upon the roots of the plant, and then placing another plant into the ſecond cut, cover its roots with the earth of a third ſpit, and ſo on to the end: but ſometimes when the roots are any thing larger, holes are made along by the line wide enough to receive the roots freely every way, ſo covering them in, as above, as you go on: obſerving always to preſs the earth gently with the foot cloſe to the roots, and cloſe about the ſtems, to ſettle the plants firmly in their proper poſition.

Herbaceous fibrous-rooted plants are, for the moſt part, planted with a dibbie, except when the roots are large and ſpreading, or ſuch as are removed with balls of earth; then they are more commonly planted by hoieing them in with a garden trowel, or ſmall ſpade.

Bulbous and tuberous-rooted plants, ſuch as lilies, tulips, anemonies, ranunculas, &c. are very commonly planted with a dibbie, but many ſorts may alſo be drilled in with a hoe, ſee DRILL-SOWING, &c. Theſe ſorts are alſo ſometimes planted as follows: rake or trim the earth from off the top of the beds from about three to four or five inches deep, into the alleys, then place the roots in rows upon the ſurface, and immediately cover them with the earth which was drawn off into the alleys for that purpoſe, ſpreading it evenly over every part, ſo as to bury all the roots an equal depth.

But as to the tender kinds of exotic-plants that require occaſional ſhelter whilſt young, many of them ſhould be potted, in order for moving to a warm ſituation in winter, or ſome into frames, &c. to have occaſional ſhelter from froſt, by glaſſes or mats, as they ſhall require; hardening them, however, by degrees to bear the open air fully in the Nurſery the year round.

And the moſt tender kinds that require the aid of a green-houſe and ſtove, muſt all be potted, and placed among the reſpective plants of thoſe conſervatories. See GREEN-HOUSE and STOVE PLANTS.

*General Culture of the Plants of this Department.*

With reſpect to the management of the various hardy Nurſery-plants;

Thoſe

Thoſe deſigned as ſtocks for fruit-trees, ſhould have their ſtems generally cleared from lateral ſhoots, ſo as to form a clean ſtraight ſtem, but never to ſhorten the leading ſhoot, unleſs it is decayed, or becomes very crooked, in which caſe it may be proper to cut it down low in ſpring, and it will ſhoot out again; training the main ſhoot for a ſtem, with its top entire for the preſent, till grafted or budded; and as to the grafting and budding them, that work is fully directed under theſe articles, and their general method of training, whether for dwarfs or ſtandards, is alſo particularly exhibited under thoſe two heads, and in the reſpective genera of the various ſorts.

Foreſt-trees ſhould alſo be encouraged to form ſtraight clean ſtems, by occaſional trimming off the largeſt lateral branches, which will alſo promote the leading top-ſhoot in aſpiring farther in height; always ſuffering that part of each tree to ſhoot at full length, that is not to top it, unleſs, however, where the ſtem divides into forks, to trim off the weakeſt, and leave the ſtraighteſt and ſtrongeſt ſhoot or branch, to ſhoot out at its proper length to form the top, as above.

The different ſorts of ſhrubs may either be ſuffered to branch out in their own natural way, except juſt regulating very irregular growths; or ſome may be trained with ſingle clean ſtems, from about a foot to two or three high, according as you ſhall think proper with reſpect to the ſorts or purpoſes for which you deſign them in the ſhrubbery; but many ſhrubs appear the moſt agreeable when permitted to ſhoot out laterally all the way, ſo as to be branchy or feathered to the bottom.

All the fruit-trees, as ſoon as grafted or budded, ſhould each ſpecies have all its different varieties numbered by placing large flat-ſided ſticks at the ends of the rows, for which purpoſe many of the London Nurſerymen uſe the ſpokes of old coach-wheels, or any thing about that ſize of any durable wood, painting or marking the numbers thereon, 1, 2, 3, &c. to different ſticks, entering the numbers in the Nurſery-book, with the name of the varieties to which the number-ſticks are placed; whereby you can at all times readily have recourſe to the ſorts wanted.

The ſame method may be practiſed to any other trees, ſhrubs, or herbaceous plants, eſpecially the varieties of particular ſorts, when they are numerous, ſuch as in many of the flowery-tribe, as auriculas, carnations, tulips, anemonies, ranunculas, and the like.

With reſpect to watering the Nurſery-plants; this may be very requiſite in dry hot weather in ſpring and ſummer, to ſeed-beds and tender ſeedling-plants, while young, and when firſt planted out till they have taken good root; alſo occaſionally to new-layed layers, and newly-planted cuttings in dry warm weather; but as to hardy trees and ſhrubs of all ſorts, if planted out at the proper time, that is, not too late in ſpring, no great regard need be paid to watering, for they will generally ſucceed very well without any: indeed where there is but a few, you may if you pleaſe water them a little, if it proves a very dry ſpring in April and May; but where there are great plantations it would be an almoſt inſupportable fatigue, and great expence; as in many public Nurſeries, where they each winter or ſpring plant out fifty or ſixty thouſand trees and ſhrubs, and in ſome double thoſe numbers.

Every winter or ſpring, the ground between the rows of all ſorts of tranſplanted plants in the open Nurſery-quarters muſt be digged; this is particularly neceſſary to all the tree and ſhrub-kind that ſtand wide enough in rows to admit the ſpade between; which work is by the Nurſery-men called *turning-in*; the moſt general ſeaſon for which work is any time from October or November until March, but the ſooner it is done the more advantageous it will prove to the plants. The ground is to be digged but one ſpade deep, proceeding row by row, turning the top of each ſpit clean to the bottom, that all weeds on the top may be buried a proper depth to rot: this work of *turning-in* is a moſt neceſſary annual operation, both to deſtroy weeds, and to encreaſe the growth of the young Nurſery-plants.

In ſummer be remarkably attentive to keep all ſorts clean from weeds; the ſeedlings growing cloſe in the ſeminary-beds muſt be hand-weeded, but the plants of all ſorts that grow in rows wide enough to introduce an hoe: this will prove not only the moſt expeditious method of deſtroying weeds, but by looſening the top of the ſoil, it will prove good culture in promoting the growth of all kinds of plants: always perform this work of hoeing in dry weather, in due time before the weeds grow large, and you may ſoon go over a large ſpace of ground, either with a large drawing-hoe, or with a ſcuffling hoe, as you ſhall find the moſt convenient. See HOE and HOEING.

Ac-

According as any quarter or compartment of the Nurſery-ground is cleared from plants, others muſt be ſubſtituted in their room from the ſeminary; but the ground ſhould previouſly be trenched and lie ſome time fallow, to recruit or recover its former vigour; giving it alſo the addition of manure, if it ſhall ſeem proper; and after being trenched in ridges, and having the repoſe only of one winter, or ſummer, or a year at moſt, it will ſufficiently recover its vegetative force, and may be planted afreſh.

It will be of advantage to plant the ground with plants of a different kind from thoſe which occupied it before.

The tender or exotic plants of all kinds that require ſhelter only from froſt, whilſt young, as we formerly mentioned, and by degrees become hardy enough to live in the open air, ſhould, ſuch of them as are ſeedlings in the open grounds, have the beds arched over with hoops, or rods, at the approach of winter, in order to be ſheltered with mats in ſevere weather; and thoſe which are in pots, either ſeedlings or tranſplanted plants, ſhould be removed in October in their pots to a warm ſunny ſituation ſheltered with hedges, &c. placing ſome cloſe under the fences facing the ſun, where they may have occaſional covering of mats in froſty weather; others that are more tender may be placed in frames, to have occaſional covering either of glaſs-lights or mats, &c. from froſt; obſerving of all thoſe ſorts here alluded to, that they are gradually to be hardened to the open ground, and need only be covered in froſty weather; at all other times let them remain fully expoſed, and by degrees as they acquire age and ſtrength inure them to bear the open air fully; ſo as when they arrive at from two or three to four or five years old, they may be turned out into the open ground. The ſorts requiring this treatment, are always pointed out under their proper heads, in their reſpective genera.

The green-houſe kinds of all ſorts, or ſuch as require conſtant ſhelter in winter, are to be managed as directed under the article GREEN-HOUSE PLANTS.

And the hot-houſe or ſtove plants, or ſuch as require conſtant ſhelter all the year, together with the aid of artificial heat, are to be managed as exhibited under the article STOVE PLANTS.

NYCTANTHES, Arabian Jaſmine.

This genus conſiſts of ſhrubby, ever-green, very flowery exotics of the Indies, for the ſtove collection; riſing with ſhrubby durable ſtems, branching ten or twelve feet high; adorned with heart-ſhaped, oval, and ſpear-ſhaped, entire leaves; and numerous monopetalous, hypocrateriforme, eight-parted, white, very fragrant flowers in cluſters at the ſides and ends of the branches.

Claſs and order, *Diandria Monogynia.*

*Characters.*] CALIX, is monophyllous, acutely eight-parted, and permanent. COROLLA, is monopetalous. hypocrateriforme, or ſaucer-ſhaped, with a cylindric tube, divided above into eight plane ſpreading ſegments. STAMINA, two ſmall ſubulate filaments, and acute erect antheræ. PISTILLUM, a roundiſh depreſſed germen, ſimple ſtyle, and two erect ſtigmas. PERICARPIUM, a roundiſh, didymous, bilocular berry, having two roundiſh ſeeds.

[1]NYCTANTHES *Sambac.*

*Sambac, or Common Arabian Jaſmine.*] Hath a ſhrubby, weak ſtem, branching ſtraggling and numerouſly mounting upon ſupport ten or twelve feet high; heart-ſhaped obtuſe leaves below, and oval acute ones above, about three inches long and one broad, placed by pairs oppoſite; and from the upper axillas and ends of the branches ſmall cluſters of pure white, very fragrant flowers, great part of the year.

[2]NYCTANTHES *Undulata.*

*Undulate-leaved Malabar Jaſmine.*] Hath a ſhrubby ſtem, branching eight or ten feet high; having taper branches; oval ſpear-ſhaped, undulate, or waved ſmooth leaves, by pairs oppoſite; and at the axillas ſmall cluſters of large ſnowy-white, ſweet-ſcented flowers.

[3]NYCTANTHES, *Arbor Triſtis.*

*Arbor-triſtis, or Sorrowful-tree, or Mournful Nyctanthes* ] Hath a ſhrubby, tetragonous, or ſquare ſtem, branching numerouſly twelve or fifteen feet high; oval, acute-pointed, oppoſite leaves, and at the axillas cluſters of white, very fragrant flowers, opening at night, and withering in the morning.

From the circumſtance of the flowers of this tree blowing on nights, and fading at the approach of morning, aſſuming a withered mournful appearance in the day-time, it obtained the name *Arbor triſtis, or Sorrowful-tree.*

[4]NYCANTHES *Hirſuta.*

*Hairy Sorrowful-tree.*] Hath a ſhrubby ſtem, branching twelve or fifteen feet high; oval, ſmooth, ſhining-green leaves, placed irregularly, having hairy foot-ſtalks; and at the

the axillas cluſters of white flowers, on hairy pedunculi, opening on nights and fade next morning.

All theſe ſhrubs are beautiful ever-greens, and flower here in our ſtoves annually; the firſt in particular is exceedingly floriferous great part of the year, and make a fine appearance; in all the ſorts the flowers are hermaphrodite, and each is monopetalous, ſalver-ſhaped, and divided above into eight ſpreading ſegments (ſee the *Characters*); thoſe of all the ſorts have ſome reſemblance to the common white Jaſmine, but larger and more divided, and of a higher fragrance, which is ſomewhat like that of orange-flowers.

The plants are all tender exotics from the hot parts of India, &c. require a hot houſe in this country; ſo muſt be kept always in pots of rich earth, and placed conſtantly in that department, except about a month or two in the heat of ſummer, when, if thought proper, they may be ſet abroad; being careful, however, to remove them into the ſtove again early in September.

The firſt ſort is that which is the moſt commonly known in the Engliſh gardens, the others are very rare in this country.

*Their Propagation, &c.*

Their propagation is by layers and cuttings, alſo ſometimes by grafting.

The layers and cuttings muſt be of the young ſhoots, and ſpring or the early part of ſummer is the proper ſeaſon for performing the work, which is to be effected in the uſual way: obſerving, that if the pots containing the layers and cuttings are plunged in the bark-bed, it will forward their rooting exceedingly; each plant is afterwards to be potted ſeparately, and plunged alſo in the bark-bed in the ſtove.

The propagation by grafting is ſometimes practiſed upon ſtocks of the common white Jaſmine, in the uſual method in ſpring: obſerving not to ſuffer any ſhoots to grow from the ſtock below the graft; training the main ſhoot from the graft, a foot or two high to form a ſtem.; then encourage it to branch out to form a head.

Let the plants have a due ſupply of water all the year; and if they grow luxuriant, prune them as you ſhall ſee convenient; and ſhift them into larger pots occaſionally.

NYMPHÆA, *(Nymphæa)* Water-Lily.

The plants are herbaceous, very flowery perennials of the aquatic-tribe, inhabitants of our rivers and brooks; but ſometimes cultivated in canals, ponds, &c. of gardens, for ornament, and have a beautiful effect: they having large knotty roots, ſending up very large heart-ſhaped leaves on long footſtalks, and float on the ſurface of the water; and between them very large polypetalous flowers, on very long pedunculi, and ſhew themſelves alſo juſt above the ſurface of the water, and are exceedingly ornamental.

Claſs and order, *Polyandria Monogynia.*

*Characters.*] CALIX, four large, coloured, permanent leaves. COROLLA, many petals (generally about fifteen) ſitting on the germen, uſually in more than a ſingle ſeries. STAMINA, numerous, ſhort, crooked filaments, and oblong antheræ affixed to their ſides. PISTILLUM, a large oval germen, no ſtyle, but an orbicular, plane target-ſhaped, cloſe-ſitting, crenated, permanent ſtigma. PERICARPIUM, a large oval, fleſhy, hardy, rude, multilocular bacca, crowned at top, and filled with many roundiſh ſeeds.

The moſt noted ſpecies are:

[1]NYMPHÆA *Lutea.*

*Yellow Nymphæa.*] Hath a large, knotty, ſpongy, deeply-ſtriking root; very large, heart-ſhaped, flat-expanded, entire leaves; and large yellow flowers, having a pentaphyllous calix, larger than the petals.

[2]NYMPHÆA *Alba.*

*White Nymphæa.*] Hath a large, knotty, ſpongy, deeply-penetrating root; large, heart-ſhaped, flat-expanded, entire leaves; and large, white, ſweet-ſcented flowers, having a quadrifid calix.

Both the ſpecies flower in June and July; the flowers are very large and conſpicuous, beautifully ſhewing themſelves on the ſurface of the water.

The plants are perennial in root, which ſtrikes deep into the ſand, gravel, or mud at the bottom of the water, from which ariſe their leaves and flowers annually, elevated to the top of the water, on long foot ſtalks, where they float, and juſt appear on the ſurface; the leaves generally coming up in April or May, and the flowers in June and July; ſucceeded by their large oval pericarpiums, filled with black ſhining ſeeds, ripening in the end of Auguſt, or in September; when being diſcharged from their cells, they ſink to the bottom of the water, where they germinate in ſpring following, and young plants ſoon appear at top; ſo that the plants thus multiplying each year, and the roots of each year's plants abiding and multiplying by offſets, they ſoon ſpread over a large ſpace of water.

*Their*

*Their Propagation.*

The propagation of theſe plants in gardens is by ſeed caſt into any piece of water where you intend they ſhall grow. To obtain the ſeeds, you muſt have recourſe in autumn to the places where the plants grow naturally, and watch the ripening of the ſeed-veſſels, gather a quantity juſt as they begin to open, which caſt into the water; the ſeeds will ſink, and the plants will appear at top in ſpring after, and ſome of which will probably flower the enſuing ſummer, though it is generally the ſecond year before they flower in perfection.

They being once thus raiſed, they will be of many years duration, and multiply greatly, ſo as to cover the whole ſurface of the water with their leaves and flowers in ſummer; ſo that only ſome ſmall pieces of water ſhould be allotted for this purpoſe.

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# O.

OCYMUM, *(Baſilicum)* Baſil.

The plants are moſtly herbaceous, tender aromatic annuals, of branchy growth, proper for culinary and medical uſes, and for adorning the pleaſure garden; obtaining in ſtature, ſome half a yard, others little more than half a foot; cloſely garniſhed with oval and oblong ſimple leaves; and the ſtems and branches terminated by ſpikes of ſmall monopetalous ringent flowers.

Claſs and Order, *Didynamia Gymnoſpermia.*

*Characters.*] CALIX, is monophyllous, bilabiated and permanent, the upper lip biſid, and the under acutely four-parted. COROLLA, is monopetalous, ringent, and inverted, with a ſhort ſpreading tube, and with the riſing lip broadeſt, cut into four obtuſe parts, the other is long, narrow, and undivided. STAMINA, two long and two ſhort declinated filaments, and half-moon-ſhaped antheræ. PISTILLUM, a four-parted germen, ſlender ſtyle, and biſid ſtigma. PERICARPIUM, none, four naked ſeeds lodged in the calix.

There are ſeven or eight ſpecies, but the moſt noted ſpecies in our gardens are the three following: each of which compriſes many varieties; all of which are remarkable for their ſtrong odoriferous ſcent, and are all of a tender quality, requiring to be raiſed and forwarded in a hot-bed.

[1]OCYMUM *Baſilicum.*

*Baſilicum, or Common Sweet Baſil.*] Riſes with an upright, ſquare, hairy ſtem, branching by pairs, from about ten inches to half a yard high; garniſhed with large, oval, ſmooth, oppoſite leaves; and the main ſtem and all the branches terminated by ſpikes of ſmall whitiſh flowers, having ciliated calixes.

*Varieties of this.*] Broad-leaved Baſilicum —narrow-leaved—fringed-leaved——fringed purple-leaved——curled-leaved——ſtudded-leaved——large purple-leaved——dark-green-leaved——tricolor-leaved——red-flowered——purple-flowered——long-ſpiked—ſhort-ſpiked, &c.

This ſpecies and varieties have a piercing aromatic ſcent, ſome like cloves, others like citron, and ſome like fennel; they are good for culinary uſes, in ſoup, &c. alſo for medical purpoſes; and the plants are employed for embelliſhing the pleaſure-garden.

[2]OCYMUM *Minimum.*

*Smalleſt Ocymum, commonly called Buſh Baſil.*] Riſes with a very ſhort ſtem, branching all around from the bottom, about ſix or eight inches high, forming a round buſhy head; ſmall oval very intire leaves, by pairs oppoſite; and the branches terminated by whorls of very ſmall whitiſh flowers.

*Varieties.*] With hoary leaves—dark-purple-leaved—variable-leaved.

This ſpecies and varieties are much cultivated about London, in pots to carry to market, for ornamenting balconies, windows, &c.

[3]OCYMUM *Tenuiflorum.*

*Small-flowered China Baſil.*] Riſes with an upright, taper, purpliſh ſtem, branching a foot

ſoot and a half high; oval-oblong, ſerrated leaves; and the main ſtem and branches terminated each by three ſlender ſpikes of exceedingly ſmall flowers, having heart-ſhaped, concave, reflexed bractæa.

*Varieties.*] With white flowers—purple flowers.

All theſe three ſpecies of *Ocymum*, and their reſpective varieties, are of the annual-tribe, riſing from ſeed in ſpring, flower in June and July, and ripen ſeeds in September, and totally periſh at the approach of winter; ſo that a freſh ſupply muſt be raiſed from ſeed annually in ſpring. See their *Propagation*.

The flowers are ſmall ringent hermaphrodites, collected into ſlender ſpikes of but little appearance.

All the ſpecies and varieties are accounted the ſtrongeſt aromatics in nature, and, for the general part, the odour is very agreeable; though to ſome perſons it is rather too powerful.

They are all exotics from India and other diſtant warm countries, and in theſe parts require to be raiſed and forwarded in hot-beds, as above obſerved, from March or April until towards the latter end of May or beginning of June, according to the temperature of the ſeaſon; then may be fully expoſed for the remainder of the ſummer.

With reſpect to their particular merit for our gardens, the common ſort *Ocymum Baſilicum*, and varieties, may be employed as culinary aromatics in the kitchen-garden; and ſome of all the three ſpecies, &c. as ornamental plants for the pleaſure-ground, both in the open compartments, and ſome in pots, in order for adorning court-yards, and to place in room-windows for their ſweet odour, particularly the Buſh-Baſil.

*Their Propagation, &c.*

The propagation of all the three ſpecies is by ſeed annually, in ſpring, in a hot-bed, and from which they are tranſplanted into the open ground, &c. in May or June.

March and beginning of April is the proper ſeaſon for ſowing them. Having a moderate hot-bed under a frame and glaſſes, earthed five or ſix inches depth of light mould; ſow the ſeed a quarter of an inch deep; they will come up in a few days: obſerving to indulge them with freſh air daily, and occaſional very moderate waterings; and when the plants are an inch or two high, prick ſome of them upon the ſame or another new hot-bed, three or four inches aſunder; or plant ſome ſingly in ſmall pots, and plunge them in the hot-bed, give water as ſoon as planted, together with occaſional ſhading from the ſun till freſh-rooted; continuing the admiſſion of freſh air daily, and repetitions of light refreſhments of water: in May harden them by degrees to the full air; and about the middle or latter end of the month, or beginning of June, in warm moiſt weather remove them into the open air, finally to remain, taking them up with balls about their roots, and plant ſome in the borders, others in larger pots, to move where occaſionally wanted; give water directly, and at times till they have taken freſh root, which they will ſoon effect, and arrive to their full growth in June and July, when they will flower, and ripen ſeeds in September.

To obtain more effectually ſome good ſeeds of thoſe plants in this country, it is adviſeable to move ſome in their pots in Auguſt into a glaſs-caſe, or garden-frame, to be ſheltered in cold weather, and from exceſſive wet; but admitting the free air in fine weather, and they will thus ripen ſeeds in tolerable plenty.

OCTANDRIA, the name of the eighth claſs: plants with hermaphrodite flowers, having eight ſtamina; and conſiſts of four orders, according to the number of ſtyles.

OENOTHERA, Tree-Primroſe.

This genus of plants conſiſts of hardy herbaceous biennials and perennials, and underſhrubby perennials; all of the flowery tribe, for the decoration of the pleaſure-garden; riſing with upright firm ſtems, from one foot to three or four high, in different ſorts; garniſhed with largiſh oval and ſpear-ſhaped leaves; and from the axillas on every ſide large, quadripetalous, primroſe ſhaped, yellow flowers, of conſiderable appearance; from June or July until October.

Claſs and order, *Octandria Monogynia*.

*Characters.*] CALIX, is monophyllous, long, tubular, divided at the brim into four acute reflexed ſegments, and is deciduous. COROLLA, heart-ſhaped plane petals, inſerted into the diviſions of the calix. STAMINA, eight awl-ſhaped, crooked filaments, terminated by oblong incumbent antheræ. PISTILLUM, a cylindric germen under the calix, filiforme ſtyle, and a thick, quadrifid, obtuſe, reflexed ſtigma. PERICARPIUM, a cylindric, tetragonous, quadrilocular, quadrivalved capſule, containing many ſmall angular ſeeds.

The moſt remarkable ſpecies of this genus in the Engliſh gardens are:

[1]OENOTHERA *Biennis.*

*Common Biennial Tree-Primroſe.*] Hath a long, thick, deeply-ſtriking root; crowned with many large, oval, ſpear-ſhaped, plane, ſpreading leaves; upright, thick, firm, rough, hairy ſtems, riſing three or four feet high; garniſhed with long, narrow, lanceolate, cloſe-ſitting leaves, irregularly; and at all the axillas, from the middle upwards, large bright-yellow flowers.

[2]OENOTHERA *Octovalvis.*

*Octovalved, Smooth, Biennial Tree-Primroſe.*] Hath upright, firm, ſomewhat hairy ſtems, riſing a yard high; oblong, ſpear-ſhaped, pointed, plane, ſmooth leaves; and at the axillas large bright yellow flowers.

[3]OENOTHERA *Fruticoſa.*

*Shrubby, Narrow-leaved, Perennial Tree-Primroſe.*] Hath long thick roots; upright, under-ſhrubby-like, red ſtems, two or three feet high; ſpear-ſhaped, lightly-indented leaves; and at the axillas pedunculated cluſters of yellow flowers; ſucceeded by pedicellated, acute-angled capſules.

[4]OENOTHERA *Pumila.*

*Low Perennial Tree-Primroſe.*] Hath fibrous roots; crowned with many oval, ſpear-ſhaped, cloſe-ſitting leaves; ſlender herbaceous ſtems, ten or twelve inches long; garniſhed with ſpear-ſhaped, blunt, ſmooth leaves, having very ſhort foot-ſtalks; and at the axillas ſmalliſh bright-yellow flowers; ſucceeded by acute-angled capſules.

All theſe plants flower very profuſely in June and July, coming out almoſt half the length of the ſtalks from the axillas; and as the ſtalk advances in ſtature, new flowers are produced, ſucceeding thoſe below; in which order the plants continue flowering from about Midſummer until October; each flower is moderately large and conſpicuous, conſiſting of four plane petals, which with the calix forms a very long tube below, and ſpreading above, generally expand moſt towards the evening; and are ſucceeded by plenty of ſeed in autumn for propagation.

Theſe plants are exotics from America, but are all very hardy, proſper in any common ſoil and ſituation, and have been long in the the Engliſh gardens, eſpecially the firſt three ſorts, but the *Oenothera Biennis* is the moſt commonly known.

The firſt and ſecond ſpecies are biennial, and the third and fourth are perennial in root.

They are proper to be employed as plants of ornament for embelliſhing the pleaſure-garden; they may be placed any where, and will effect a very agreeable variety three or four months with their plentiful blow of flowers.

The biennial kinds muſt be raiſed annually from ſeed, for they totally periſh ſoon after they have flowered.

But the perennials, once raiſed, continue for years by the root.

*Their Propagation.*

The propagation of all the ſorts is by ſeed, and the perennials alſo by parting the roots.

By Seed.—By this method both biennials and perennials may be raiſed plentifully in any bed or border of common earth. Sow the ſeed either in autumn or early in ſpring; the autumnal ſowings will riſe ſtrong betimes in the ſpring. In May or June, when the plants are two or three inches high, thin them where too cloſe; at the ſame time plant out a quantity in nurſery-rows ſix inches aſunder; give occaſional weeding, and plenty of water in dry weather; and in autumn they may be taken up with balls of earth about their roots, and planted where they are finally to remain.

By Parting the Roots.—The perennials being abiding, and multiplying by off-ſets of the roots; they may be propagated by dividing the roots into ſlips, in autumn or ſpring; each ſlip becomes a proper plant, producing flowers the following ſummer.

OFF-SETS, a ſort of ſuckers, or ſmall young plants, iſſuing from the ſides of the main roots of many ſorts of perennials, both bulbous, tuberous, and fibrous-rooted kinds, by which vaſt numbers of plants are propagated, as each Off-ſet becomes a proper plant, alike in every reſpect to the parent.

But Off-ſets are applicable moſt commonly to bulbous and tuberous-rooted perennials, ſuch as tulips, anemonies, &c. the Off-ſets of which are ſmall bulbs and tubers; and as moſt of the bulbous and tuberous-rooted tribe ſend forth plenty of Off-ſet roots from the ſides of the main ones annually, it is a certain, eaſy, and expeditious method of propagating all theſe kinds of plants, and each Off-ſet commences a new plant, producing ſtalks, leaves, flowers, fruit, &c. exactly like thoſe of the parent plant; ſo that having ſome roots of any particular approved ſpecies and varieties, you may increaſe them annually by the Off-ſets, and which, after having one or

two years growth, will flower, produce ſeed, and furniſh a ſupply of Off-ſets in their turn: all ſtill continuing the ſame as the mother-plant in every mode of growth.

Off-ſets, in the article of propagation, have this particular advantage over ſeedlings, that thoſe of the flowery kind will often flower in one year: whereas ſeedling plants of the bulbous kinds are frequently four, five, and ſometimes ſix or ſeven years before they flower in perfection; ſo that ſeedlings are principally to gain new varieties; and the roots of which furniſhing Off-ſets the varieties are increaſed.

As to the mode of ſeparating Off-ſets, it may be done in ſome ſorts every year, in others once in two or three years, according to the ſorts, and the increaſe of Off-ſets the main roots ſhall afford; which is always explained in the culture of the reſpective ſorts, under their proper genera.

The proper ſeaſon for ſeparating Off-ſets is, in the bulbous and many tuberous-rooted plants, chiefly ſummer and autumn, when they have done flowering, and the leaves decay, for at that period the roots of theſe ſorts having had their full growth for that ſeaſon, they aſſume an inactive ſtate of growth, not drawing any nouriſhment from the earth: they continuing at reſt, however, but a few weeks, attention muſt be had to take the opportunity of that interval, before they put out new fibres; which is the only proper period for moving all the bulbous kinds in particular, both to ſeparate the Off-ſets, and for tranſplanting the main roots, as for taking them up for keeping for a month or two, or longer. See BULBUS. Obſerving therefore the proper time, and having taken up the roots in dry weather if poſſible, let all the Off-ſets be ſeparated ſingly from the main bulb, &c. and plant the Off-ſets in nurſery-beds, in rows ſix inches aſunder, drilling them in with a hoe, two or three inches deep; and here let them remain a year or two, according to their ſize, to get ſtrength; then tranſplant them, at the proper ſeaſon, where they are to continue, managing them as other bulbous and tuberous-rooted plants. See BULBUS, RADIX, &c.

But with reſpect to Off ſets of fibrous-rooted perennials, you may either ſlip off the principal ones from the ſides of the main root, as they ſtand in the ground, or the root may be wholly taken up, and parted into as many ſlips as there are Off-ſets furniſhed with fibres. The proper ſeaſon for this is autumn, when their ſtalks decay, or early in ſpring before new ones begin to ſhoot forth; though ſome hardy ſorts may be ſlipped any time in open weather from September or October until February, planting them by dibble, the ſmaller Off-ſets or ſlips in nurſery-beds, in rows ſix or eight inches aſunder, to have a year's growth; and the larger ones may be planted at once where they are to remain, and they will flower the enſuing ſeaſon.

Several ſorts of ſhrubby perennials encreaſe by alſo Off-ſets at bottom; and the proper ſeaſon for taking them off is autumn and ſpring, or in hardy kinds it might be done any time in open weather, from October until March; planting them in nurſery-rows for a year or two, or till of proper ſize for the purpoſes for which they are deſigned.

Off-ſets of ſucculent plants ſhould generally be ſlipped off in ſummer; and previous to planting thoſe of the tender kinds, ſhould be laid on a dry ſhelf for ſome days, till the moiſture at bottom is dried up; then planted in pots of dry ſoil, and managed according to their different temperatures. See SUCCULENTÆ. No Off-ſets are ever to be expected from annual plants.

OLEA, Olive-tree.

This genus conſiſts of two ever-green exotic-trees for the green-houſe collection; generally aſſuming a ſhrubby-like growth, by riſing frequently with ſeveral ſtems from the bottom, branching laterally all the way; one ſort obtaining in ſtature twenty or thirty feet high, the other but ſix or ſeven feet; garniſhed with ſpear-ſhaped and oval ſtiff leaves, and cluſters of funnel-ſhaped flowers from the axillas; ſucceeded by that well-known oval fruit called Olives, in great eſtimation abroad for making oil, and for pickling, &c. but in this country the plants are retained principally for variety, as the fruit rarely attains due perfection.

Claſs and order, *Diandria Monogynia.*

*Characters.*] CALIX is ſmall, monophyllous, tubulous, quadridented, and deciduous. COROLLA, is monopetalous, infundibuliforme, with the top quadripartite and ſpreading. STAMINA, two ſhort filaments, and erect antheræ. PISTILLUM, a roundiſh germen, ſhort ſtyle, and thick bifid ſtigma. PERICARPIUM, a ſuboval, ſmooth, unilocular, drupaceous fruit, including an oblong-oval nut.

There are but two ſpecies, one of which, however, compriſes many varieties with reſpect to the fruit.

The ſpecies are;

[1]OLEA *Europæa.*

*European Common Olive tree.*] Riſes with upright ſolid ſtems, branching numerouſly on every ſide, twenty or thirty feet high; ſpear-ſhaped, ſtiff, oppoſite leaves, two or three inches long, and half an inch or more broad; and at the axillas ſmall cluſters of white flowers, ſucceeded by oval fruit.

This ſpecies is the principal ſort cultivated for its fruit; the varieties of which are numerous, varying in ſize, colour, and quality.

It is a native of the ſouthern warm parts of Europe, and is cultivated in great quantities in the ſouth of France, Italy, and Portugal, for the fruit to make the Olive-oil, which is in ſo great repute, and is tranſported to all parts, to the great advantage of thoſe countries where the trees grow in the open ground: the green fruit is alſo in much eſteem for pickling, of which we may ſee plenty in the ſhops.

[2]OLEA *Capenſis.*

*Cape Box-leaved Olive.*] Riſes with ſhrubby ſtems, branching numerouſly from the bottom, ſix or ſeven feet high; ſmall, oval, thick, ſtiff, ſhining leaves; and at the axillas ſmall cluſters of whitiſh flowers; ſucceeded by ſmall fruit of inferior value.

Theſe plants in this country muſt be kept principally in pots for moving to ſhelter of a green-houſe in winter; for they are too tender to proſper well in the open ground here; though ſometimes they are planted againſt a warm ſouth wall, and ſheltered occaſionally from froſt in winter, by mulching the roots, and matting their tops; whereby they may be preſerved, and will ſometimes produce fruit for pickling; a very ſevere winter, however, often kills or greatly injures their young branches; therefore let the principal part be potted in rich earth, and placed among the green-houſe ſhrubs, and managed as directed in the article GREEN-HOUSE PLANTS.

Theſe trees are often ſent over from Italy to the Italian warehouſes in London, along with orange-trees, &c. where pretty large plants may be purchaſed reaſonably, which ſhould be managed as directed for orange-trees that are imported from the ſame country. See CITRUS.

Their propagation here is commonly by layers.

The laying is performed on the young branches in ſpring; give plenty of water all ſummer, and they will ſometimes be rooted fit for potting-off by autumn; but ſometimes they require two ſummers to be rooted effectually: when, however, they are properly rooted, take them off early in autumn, and pot them ſeparately, give water, and place them in the ſhade till they have taken freſh root; and in October remove them into the green-houſe, &c.

Thoſe you intend to plant in the open-ground, as before ſuggeſted, ſhould be kept in pots, in order to have occaſional ſhelter of a garden-frame two or three years, till they have acquired ſome ſize, and are hardened to the full air; then tranſplant them into a warm border againſt a wall: mulch their roots in winter, and mat their tops in froſty weather.

ONONIS, Reſt-Harrow.

It conſiſts of hardy herbaceous perennials and annuals, and ſome ſhrubby plants; ſeveral of the former are troubleſome weeds in the fields, and ſome of the latter are proper for ornamenting the pleaſure-ground; moſt of the ſorts grow erect from about one foot to two or three high; garniſhed ſome with ſimple, others with trifoliate leaves; and papilionaceous flowers.

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX, is divided into five narrow arched ſegments, the lower ones bending under the carina. COROLLA, is papilionaceous, the ſtandard heart ſhaped, and depreſſed on the ſides, ſhort oval wings, and a pointed carina. STAMINA, ten diadelphous filaments, and ſimple antheræ. PISTILLUM, an oblong hairy germen, ſimple ſtyle, and obtuſe ſtigma. PERICARPIUM, a turgid, unilocular, bivalved pod, having kidney-ſhaped ſeeds.

There are many ſpecies, ſeveral of which are common weeds, often very troubleſome in the fields, their roots ſpreading widely around, and are ſo tough and ſtrong, as ſometimes to retard the progreſs of the huſbandman's harrow; whence originated the Engliſh name, Reſt harrow.

The moſt material ſpecies common to the gardens, are the following ſhrubby kinds.

[1]ONONOIS *Fruticoſa.*

*Shrubby Purple Reſt-harrow.*] Riſes with ſlender, ſhrubby, durable ſtems, branching numerouſly two or three feet high; ſpear-ſhaped, ſerrated, ternate leaves; and all the branches terminated by panicles of large red flowers, three on each pedunculi.

[2]ONONIS

[1]ONONIS *Tridentata*.

*Tridented Shrubby Reſt-harrow.*] Riſes with ſhrubby, ſlender ſtems, branching half a yard high; narrow, fleſhy, ternate leaves, tridented at the top; and the branches terminated by panicles of purple flowers, two on each pedunculi.

Both theſe ſhrubs flower very ornamentally in May or June, the flowers are papilionaceous or butterfly-ſhaped, large and conſpicuous, and are ſucceeded by ripe ſeeds in autumn.

The firſt ſort is very hardy, and proper for the ſhrubbery.

The ſecond requires ſhelter from froſt, ſo ſhould generally be kept in pots, in order for moving to a green-houſe or garden-frame in winter.

Their propagation is by ſeed, ſowed in April in a warm border, half an inch deep; or if thoſe of the ſecond ſort are ſowed in pots and plunged in a ſlender hot-bed, they will more certainly ſucceed; the plants will come up in May; give plenty of water all ſummer, and indulge the ſecond ſort with ſhelter in winter; in ſpring plant out both ſorts; the firſt in nurſery-rows a foot aſunder, to remain a year or two, when they will be fit for the ſhrubbery; and the ſecond plant in pots for moving to ſhelter in autumn.

OPHRYS, Twyblade, Bee-flower, &c.

This genus is compoſed of herbaceous, bulbo-fibrous-rooted perennials, moſtly inhabitants of our woods, paſtures, meadows, and ſome hilly grounds, but frequently employed in the pleaſure-garden for the ſingularity of their flowers; moſt of them are low plants, with erect annual ſtalks, from three or four inches to a foot high; ſome naked and ſome foliated, and terminated by ſpikes of ſmall pentapetalous nectariferous flowers, frequently of ſingular ſhapes, reſembling in ſome ſorts the figures of men, and various ſorts of inſects, as flies, bees, &c.

Claſs and order, *Gynandria Diandria.*

*Characters.*] CALIX, a vague ſpatha, protruding a ſimple ſpadix of flowers, without any perianthiums. COROLLA, five oblong, equal-aſcending petals, and a dependent long nectarium, keel-ſhaped behind. STAMINA, two very ſhort gynandrous filaments, and erect antheræ. PISTILLUM, an oblong contorted germen below the flower, a ſtyle adhering to the inner border of the nectarium, and obſolete ſtigma. PERICARPIUM, a trigonal, unilocular, trivalvular capſule, filled with numerous ſeeds like duſt.

The Engliſh name *Twyblade*, is from ſome of the ſpecies being remarkable for having only two leaves.

There are many ſpecies, but the moſt noted are the following, which are admitted into ſome pleaſure-gardens for variety.

[1]OPHRYS *Ovata.*

*Oval-leaved Ophrys, or Common Twyblade.*] Hath a bulboſe, fibrated root; crowned by two oval, broad, obtuſe, veined, oppoſite leaves; an erect, ſucculent, green ſtalk, ſix or eight inches high, naked above, and terminated by a looſe ſpike of greeniſh flowers, having the lip of the nectarium bifid.

The flowers of this ſpecies reſemble the figure of gnats.

[2]OPHRYS *Spiralis.*

*Spiral Orchis, or Triple Ladies Traces.*] Hath bulbous, oblong, aggregated roots; crowned by a cluſter of oval, pointed, ribbed leaves; erect ſimple ſtalks, half a foot high; terminated by long ſpikes of white, odoriferous flowers, hanging to one ſide, having the lip of the nectarium entire, and crenated.

[3]OPHRYS *Nidus-avis.*

*Nidus-avis, or Birds-neſt.*] Hath a bulboſe, fibrated, cluſtered root; upright, thick, ſucculent ſtalks, a foot high, ſheathed by the leaves, and terminated by looſe ſpikes of pale-brown flowers; having the lip of the nectarium bifid.

[4]OPHRYS *Anthropophora.*

*Man-ſhaped Ophrys, or Man Orchis.*] Hath a roundiſh bulboſe root; crowned with three or four oblong leaves; upright thick ſtalks, riſing a foot and a half high; adorned with narrow leaves, and terminate by looſe ſpikes of greeniſh flowers, repreſenting the figure of a naked man; the lip of the nectarium linear tripartite, with the middle ſegment longeſt and bifid.

*Variety.*] With browniſh flowers tinged with green.

[5]OPHRYS *Inſectifera.*

*Inſectiferous Ophrys, or Inſect Orchis.*] Hath two roundiſh bulbous roots; crowned with oblong leaves; erect leafy ſtalks, from ſix to ten or twelve inches high, terminated by ſpikes of inſect-ſhaped greeniſh flowers, having the lip of the nectarium almoſt five-lobed.

This wonderful ſpecies exhibit flowers in different varieties, that repreſent ſingular figures

gures of flies, bees, and other inſects; and are of different colours in the varieties.

*Varieties are.*] Fly-ſhaped *Ophrys*—great fly *Ophrys*—large green fly *Ophrys*—blue fly *Ophrys*—yellow fly *Ophrys*—bee *Ophrys*—large bee *Ophrys*—black bee *Ophrys*—green winged bee *Ophrys*—beetle *Ophrys*—ſpider *Ophrys*.

6 OPHRYS *Monorchis*.

*Monorchis, or Muſky Ophrys.*] Hath a roundiſh bulboſe root; crowned with three or four oblong leaves; an erect naked ſtalk, ſix inches high; terminated by a looſe ſpike of yellowiſh, muſky-ſcented flowers.

All theſe ſix ſpecies of *Ophrys* flower in ſummer, at different times in different ſorts, from May until July; and in moſt of the ſorts exhibit a ſingularly curious appearance.

The plants are all perennial in root, which are of the bulbous fleſhy kind, from which the flower-ſtalks riſe annually in ſpring, and decay in autumn; at which period is the proper time for removing the roots from one place to another.

They all grow wild in England, &c. are reſidents of woods, bogs, marſhy grounds, ſterile paſtures, chalky ſoils, and the like places, where they flouriſh and diſplay their ſingular flowers in great abundance, from which places they are introduced into gardens for variety; and having procured ſome plants at the proper ſeaſon, and planted them in ſoils and ſituations ſomewhat ſimilar to that where they naturally grow, the roots will abide for ſeveral years, and flower annually.

They may be eaſily obtained from the places where they naturally grow, and are kept at moſt of the public nurſeries for ſale.

The proper ſeaſon for removing them is in ſummer when the ſtalks decay; therefore repairing either to the places of their growth, when in full bloom, or to the nurſeries, mark a quantity of the beſt plants with ſticks; and when the ſtalks and leaves aſſume a decayed ſtate, proceed to dig up the roots, and bring them into the garden and plant them directly.

It is proper to ſuit the ſituation and ſoil of the different ſorts as near as poſſible; thoſe of the woods place in ſhady moiſt borders, or in ſhrubbery quarters among trees; thoſe of boggy or marſhy ground, plant in the moiſteſt parts of the garden; and thoſe found on dry ſterile plains or commons, ſhould have a dry open expoſure.

Having planted them, let them remain conſtantly undiſturbed, unleſs particularly wanted to be removed from one place to another, for the leſs they are diſturbed the better they will flower.

As to their propagation, it may be tried by ſeed in a ſhady border, as ſoon as it is ripe; likewiſe by off ſets from the root, though they multiply ſparingly in gardens; however roots of ſome ſtanding may be examined at the proper ſeaſon, and any off-ſets ſeparated and planted directly in the proper places.

ORCHARD, a garden-department, conſigned intirely to the growth of ſtandard fruit-trees, for furniſhing a large ſupply of the moſt uſeful kinds of fruit.

In the orchard you may have as ſtandards all ſorts of apple-trees, moſt ſorts of pears and plums, and all ſorts of cherries; which four ſpecies are the capital Orchard-fruits: each of which compriſe numerous valuable varieties; but to have a complete Orchard, may alſo have quinces, medlars, mulberries, ſervice-trees, filberts, Spaniſh nuts, berberries; likewiſe walnuts and cheſnuts; which two latter are particularly applicable for the boundaries of Orchards, to ſcreen the other trees from the inſults of impetuous winds and cold blaſts: all of which trees being arranged in rows from twenty to thirty feet diſtance, as hereafter directed.

But ſometimes Orchards conſiſt intirely of apple-trees, particularly in the cyder-making countries, where they are cultivated in very great quantities in large fields, and in hedge-rows, for the fruit to make cyder for public ſupply.

And ſometimes whole Orchards of very conſiderable extent are intirely of cherry-trees; but in this caſe, it is when the fruit is deſigned for ſale in ſome great city, as London, &c. for the ſupply of which city, great numbers of large Cherry-Orchards are in ſome of the adjacent counties, but more particularly in Kent, which is famous for very extenſive Cherry-Orchards; many of which are entirely of that ſort called Kentiſh cherry, as being generally a great bearer; others are ſtored with all the principal ſorts of cultivated cherries, from the earlieſt to the lateſt kinds. See PRUNUS *Ceraſus*.

A general Orchard, however, compoſed of all the before mentioned fruit-trees, ſhould conſiſt of a double portion of apple-trees or more, becauſe they are conſiderably the moſt uſeful fruit, and may be continued for uſe the year round.

The

The utility of a general Orchard, both for private uſe and for profit, ſtored with the various ſorts of fruit-trees, muſt be very great, as well as afford infinite pleaſure from the delightful appearance it makes from early ſpring till late in autumn: in ſpring the various trees in bloſſom are highly ornamental; in ſummer, the pleaſure is heightened by obſerving the various fruits advancing to perfection; and as the ſeaſon advances, the mature growth of the various ſorts arriving to perfection in regular ſucceſſion from May or June until the end of October, muſt afford exceeding delight, as well as great profit.

*Of the proper Extent, Situation, and Soil, for this Department.*

As to the proper extent of ground for an Orchard, this muſt be proportioned, in ſome meaſure to the extent of land you have to work on, and the quantity of fruit required either for private uſe, or for public ſupply: ſo that an orchard may be from half an acre to twenty or more extent.

With reſpect to the ſituation and aſpect for an Orchard, we may obſerve very thriving Orchards both in low and high ſituations, and on declivities and plains, in various aſpects or expoſures, provided the natural ſoil is good: I ſhould, however, avoid very low damp ſituations as much as the nature of the place will admit; for in very wet ſoils no fruit-trees will proſper, nor the fruit be fine; but a moderately low ſituation, free from copious wet, may be more eligible than an elevated ground, as being leſs expoſed to tempeſtuous winds; though a ſituation having a ſmall declivity is very deſirable, eſpecially if its aſpect incline towards the eaſt, ſouth-eaſt, or ſoutherly, which are rather more eligible than a weſterly aſpect; but a north aſpect is the worſt of all for an Orchard, unleſs particularly compenſated by the peculiar temperament or good quality of the ſoil: I would, however, remark, for the advantage of thoſe that are not accommodated with choice of ſituation and aſpect, that they need not be under any great anxiety, provided as above ſaid, if the ſoil is but ſuitable; only obſerving, if poſſible, to abandon very low damp ſituations, for the reaſon before given.

And as for ſoil, any common field or paſture that produces good crops of corn, graſs, or kitchen-garden vegetables, is ſuitable for an Orchard; if it ſhould prove of a loamy nature, it will be a particular advantage: any ſoil, however, of a good quality, not too light and dry, or too heavy, ſtubborn, or wet, but of a medium nature of a ſoft pliant temperature, not leſs than one ſpade deep of good ſtaple, will be proper for this purpoſe.

Where, however, the ſoil is naturally defective, the defects muſt be rectified as well as poſſible, by the application of proper manures, and compoſts prepared as directed under thoſe articles, and applied either to the whole ground, if but of moderate extent, or to the places where each tree is to ſtand, for a ſpace of eight or ten feet circumference, working it up with the natural ſoil of the place.

This, however, in extenſive Orchards, would be a very chargeable operation; therefore thoſe who are at liberty to chuſe, ſhould have particular regard to the fixing upon a proper ſpot, where but little or no foreign aid is requiſite.

*Preparation of the Ground.*

The preparation of the ground for the reception of the trees, is by trenching, or if for very conſiderable Orchards, by deep ploughing; but trench-digging, one or two ſpades, as the ſoil will admit, is the moſt eligible, either wholly, or only for the preſent, in the places where the lines of trees are to ſtand, a ſpace of ſix or eight feet wide, all the way in each row, eſpecially if it be graſs-ground, and intended to be kept in ſward; or if any under-crops are deſigned to be raiſed, the ground may be wholly trenched at firſt; but as to this you may ſuit your convenience, obſerving in either caſe to trench the ground in the uſual way to the depth of the natural ſoil; and if in graſs, turn the ſward clean to the bottom of each trench, which, when rotted, will prove an excellent manure.

In planting Orchards, however, on graſs-ground, ſome only dig pits for each tree, capacious enough for the reception of the roots, looſening the bottom well, without the labour of digging any other part of the ground: where the ground, however, is trenched either wholly, or ſome conſiderable width along the place of each row of trees, it will conſequently prove of greater advantage in promoting their free growth.

The ground muſt be fenced ſecurely againſt cattle, &c. either with a good ditch and

hedge, or with a paling-fence, as may be moſt convenient. See HEDGES.

*Method of planting the Trees.*

The beſt ſeaſon for planting all the ſorts of fruit-trees is autumn, ſoon after the fall of the leaf, from about the latter end of October until December; or indeed it might be performed any time in open weather from October until March.

All the ſorts of fruit-trees proper for this department, if not furniſhed with them in your own nurſery, may be had very reaſonable at all the public nurſery-grounds; obſerving to chuſe them principally full ſtandards, with ſtreight clean ſtems, ſix feet high, eſpecially the apples, pears, plums, cherries, and other tree kinds, each with a branchy well-formed head, of from two or three to four or five years growth; and let ſeveral varieties of each particular ſpecies be choſen, that ripen their fruit at different times, from the earlieſt to the lateſt, according to the nature of the different ſorts, that there may be a ſufficient ſupply of every ſort regularly during their proper ſeaſon; and of apples and pears in particular, chuſe a much greater quantity of the autumnal and late-ripening kinds, than the early ſorts; but moſt of all of apples: for the ſummer-ripening fruit is but of ſhort duration, only proper for temporary ſervice; but the later-ripening kinds keep ſound ſome conſiderable time for autumnal uſe; and the lateſt ſorts that ripen in October, continue in perfection for various uſes all winter, and ſeveral ſorts until the ſeaſon of apples come again. See the liſt of the different ſorts of fruit in this work, under their reſpective genera.

Having made choice of the proper ſorts, and marked them, let them be taken up with the utmoſt care, ſo as to preſerve all their roots as entire as poſſible; and when taken up, prune off any broken or bruiſed parts of the roots, and juſt tip the ends of the principal roots in general with the knife, on the under ſide, with a kind of ſlope outward.

If the trees have been already headed, or ſo trained as to have branched out into regular ſhoots to form each a proper head, they muſt be planted with the ſaid heads entire, only retrenching or ſhortening any irregular or ill-placed ſhoot that take an aukward direction, or grow acroſs its neighbours, or ſuch that may run conſiderably longer than all the reſt, &c. as obſerved under the reſpective articles in training them for ſtandards, alſo in the article STANDARD-TREES.

The arrangement of the trees in the Orchard muſt be in rows, each kind ſeparate, at diſtances according to the nature of growth of the different ſorts; but for the larger growing kinds, ſuch as apples, pears, plums, cherries, &c. they ſhould ſtand from twenty-five to thirty or forty feet every way aſunder, though twenty-five or thirty feet at moſt is a reaſonable diſtance for all theſe kinds.

Each ſpecies and its varieties ſhould generally be in rows by themſelves, the better to ſuit their reſpective modes of growth: tho' for variety may have ſome rows of apples and pears arranged alternately; as alſo plums and cherries; and towards the boundaries may may have ranges of leſſer growth, as quinces, medlars, filberts, &c. and the outer row of all may be walnut-trees, and ſome cheſnuts, ſet pretty cloſe to defend the other trees from violent winds.

According to the above diſtances proceed to ſtake out the ground, for making the holes for the reception of the trees; which if made to range every way, will have a very agreeable effect, and admit the currency of air, and the ſun's influence more effectually.

But in planting very extenſive Orchards, ſome divide the ground into large ſquares or quarters of different dimenſions, with intervals of fifty feet wide between: ſerving both as walks, and for admitting a greater currency of air: in different quarters planting different ſorts of fruit, as apples in one, pears in another, and plums and cherries in others, &c. and thus it may be repeated to as many quarters, for each ſpecies and its varieties, as may be convenient.

As to the mode of planting the trees, it is the ſame as directed under their ſeveral articles, and the article PLANTING. A wide hole muſt be dug for each tree, capacious enough to receive all the roots freely every way without touching the ſides. When the holes are all ready, proceed to planting, one tree to each hole, a perſon holding the ſtem erect, whilſt another trims in the earth, previouſly breaking it ſmall; and caſt it in equally about all the roots, frequently ſhaking the tree to cauſe the mould to ſettle in cloſe about all the ſmaller roots and fibres, and ſo as to raiſe the tree gradually up, that the crown of the roots may be but two or three inches below

low the general ſurface; and when the hole is filled up, tread it gently, firſt round the outſide, then near the ſtem of the tree; forming the ſurface a little hollow; and then if on the top of all is laid ſome inverted turf to the width of the holes, forming it with a ſort of circular bank, three or four inches high, it will ſupport the tree, and guard the roots from drying winds, and the ſummer's drought: obſerving that each tree ſtands perfectly upright, and that they range exactly in their proper rows.

If the orchard is much expoſed to the winds, it may be proper to ſtake the new-planted trees to ſupport them in their proper poſition, and ſecure them from being rocked to and fro by the wind, which would greatly retard their rooting afreſh; placing one or two ſtrong tall ſtakes to each tree; but the moſt effectual method is to have three ſtakes to each, placed in a triangle, meeting at top near the head of the tree, wrapping a hay-band round that part of the ſtem, to prevent its being barked by the ſtakes or tying; then tie the ſtakes at top cloſe to the tree with ſome proper bandage, bringing it cloſe about the ſtem and ſtakes together, over the hay-wrapping, in a proper manner to ſecure the tree firmly in an erect poſture.

The ground of the Orchard, between the rows of trees, is very commonly laid down in graſs, as being the moſt convenient for admitting of coming readily at the trees at all times to gather the fruit: but if thought proper, it may be employed for ſome years either wholly, or in part, for the produce of kitchen vegetables, or for the growth of corn, turneps, potatoes, &c. being careful in digging or ploughing the ground for the reception of theſe crops, not to go too near to diſturb the roots of the trees; likewiſe not to have any ſtrong growing plants within three feet of each ſide of the rows of trees: however, after the trees are advanced in growth, and begin to bear any thing conſiderably, it may be more eligible to lay the ground down intirely in graſs, as it will be then more in character of an orchard, and be more convenient for gathering the fruit, and doing any neceſſary work to the trees; but in any of theſe ways, every one may ſuit their inclination or convenience.

If, however, it is laid down in graſs, no cattle ſhould be turned in to graze at large, unleſs the ſtems of each tree is previouſly well ſecured with poſts and railing, and wattled with thorn-buſhes, eſpecially in young Orchards, otherwiſe they will bark the trees, to their very great injury, nor ſhould large cattle be turned in to Orchards, where the branches of the trees are yet low and within their reach.

*General Culture.*

With regard to the general culture of Orchard fruit-trees, obſerve for one thing, that as being ſtandards, their heads ſhould generally be permitted to branch out nearly in their own natural manner, with the branches at full length, without ſhortening, only on particular occaſions, and they will gradually form themſelves into large branchy heads, and all the branches ſoon aſſume a bearing ſtate; very little pruning of any ſort being required to ſtandard fruit-trees, except in particular caſes, as above hinted, of ſuperfluous or very irregular growths; as for example, all ſuckers ariſing from tke root, muſt conſtantly be taken off cloſe; likewiſe diveſt the ſtems of all ſide-branches coming out below the head; and all luxuriant ſhoots ariſing in the heart or middle of the tree, or in any part where they appear too much crowded, ſhould be pruned off cloſe: if any particular branch of the head ſhould become of very long ſtraggling growth, extending conſiderably beyond all the reſt, it may be ſhortened as you ſhall ſee proper, down to ſome young ſhoot, or lower branch it ſupports, ſo as to preſerve a little regularity; likewiſe any branch that takes an irregular direction acroſs the others, or any other aukward growth, ſuch may either be ſhortened down to any lower branch it ſupports that is of a regular growth, or intirely retrenched as it may ſeem proper to keep up ſome uniformity in the head; and if the head in general becomes at any time over-crowded with branches, thin out the worſt and moſt irregular growers of the ſuperfluity: all dead wood and cankered parts ſhould alſo be cut off to the live wood.

But remarking, that, except in the above caſes, the branches in general of ſtandard fruit-trees, in every ſtage of growth, ſhould be ſuffered to ſhoot forth, both in length and branch, laterally in their own way; for as moſt of the ſorts firſt form their fruit-buds, or ſpurs, near the extremity of the branches or ſhoots, if pruning their ends was practiſed, it would not only be cutting off the parts where the fruit would have been firſt produced, but would force out a number of lateral uſeleſs ſhoots, and crowd the tree with ſuperfluous or unneceſſary wood, and greatly retard the

branches from forming the above fruit-ſpurs or buds for bearing; and unleſs theſe are formed in plenty, none of the principal tree-kinds can ever produce any tolerable crops of fruit; but the trees being ſuffered to take their natural growth, according to the above rules, all the branches and ſhoots will gradually form fruit-ſpurs towards their extreme parts, at almoſt every eye or bud.

By the above hints it is obvious that ſtandard fruit trees require but very little culture in reſpect to pruning; and the leſs they are pruned, except in the before mentioned caſes, the better they will bear.

Beſides, to attempt at any regular pruning of Orchard or other ſtandard fruit-trees, would prove a very tedious as well as unneceſſary work.

When neceſſary, however, to prune any of theſe trees occaſionally in the above caſes, obſerve that the proper ſeaſon for that work is any time from the fall of the leaf until March. Likewiſe obſerve in performing that operation, that ſuch branches as require retrenching ſhould be cut off quite cloſe either to their origin, if neceſſary, or cloſe to any more convenient branch it may ſupport, not leaving any ſtump, and make the cut as even and ſmooth as poſſible.

Orchard-trees are ſometimes greatly infeſted with moſs growing all over their branches, but more particularly thoſe trees which are ſituated in very damp ſoils; alſo often in old Orchards where the trees ſtand ſo cloſe as to crowd one another ſo conſiderably as to exclude the free air: in which caſe of moſſineſs, the trees commonly aſſume a ſtunted unkindly growth, producing but indifferent crops, and the fruit often ſmall and ill-flavoured. The only remedy for this diſaſter, is, to thin out ſome of the branches where thickeſt, to admit the ſun and air more freely, and ſcrape the moſs off from the remainder, with an inſtrument directed below; but where the trees thus infeſted ſtand very cloſe to one another, ſome of them ſhould be cut down to admit a larger portion of air, and the ſun's heat and light; and for the ſame reaſon thin the branches of the remaining trees; then clear the branches in general from the groſſeſt of the moſs; for which purpoſe you ſhould be provided with ſome iron ſcrapers hollowed on the edge, and of three different ſizes to ſuit the different branches, having the edges a little blunted; and with theſe tools ſcrape off the moſs from all the principal branches at leaſt, and of as many of the ſmaller ones as your time will permit, for it is tedious work where there are many trees: after this, if the ground of the Orchard, either wholly or but ten or twelve feet width along each row of trees, is dug or deeply ploughed, it will give new vigour to the roots, and which together with the thinning of the trees to admit the ſun and air freely, and the principal branches being diveſted of the moſs, you will find them ſhoot at top with freſh vigour, and the quantity, ſize, and quality of the fruit be greatly augmented in a year or two.

For farther remarks reſpecting the particular culture of each different ſpecies, and its varieties, cultivated as Orchard-trees, ſee the ſeveral articles under their reſpective genera.

And with reſpect to the times of ripening of the different fruits, time and method of gathering the various kinds, and of preſerving thoſe of the keeping ſorts, it is properly exhibited in all the different articles under their proper heads.

ORCHIS, *(Orchis)* Fool-ſtones.

The plants are hardy, herbaceous, bulbous-rooted, flowery perennials, moſtly natives of our meadows, paſtures, woods, and uncultivated places, and which, like the ſpecies of *Ophrys*, having great ſingularity in their flowers, are admitted into pleaſure-gardens for variety; moſt of them have roots compoſed of two teſticulated bulbs, ſending up annually one or more flower-ſtalks, from about five or ſix inches to half a yard high; terminated by ſpikes of pentapetalous nectariferous flowers of various odd figures in different ſpecies, reſembling ſometimes a naked man, ſometimes a butterfly, gnat, and other ſtrange ſhapes.

Claſs and order, *Gynandria Diandria.*

*Characters.*] CALIX, a vague ſpatha, protruding a ſimple ſpadix of flowers, without perianthiums. COROLLA, five petals, three of them exterior and two interior, riſe upward and meet; and a monophyllous nectarium between the diviſions of the petals, having a ſhort upper lip; the under large, broad, and ſpreading; with the tube nutant and horn-ſhaped. STAMINA, two ſhort gynandrous filaments, and oval erect antheræ. PISTILLUM, an oblong contorted germen below the flower, very ſhort ſtyle, and a compreſſed obtuſe ſtigma. PERICARPIUM, an oblong, three-keeled, trivalvate, unilocular capſule, filled with numerous ſeeds.

The roots of moſt of the ſpecies of this genus being compoſed of two oblong fleſhy bulbs joined together, bearing an obvious reſemblance to the ſcrotum, or teſticuli of animals,

mals, it derives both its generic name, and the Engliſh appellation, Fool-ſtones, &c. Moſt of the ſpecies are celebrated provocatives, which reſtorative quality is chiefly poſſeſſed by the roots; of which alſo by a late diſcovery may be prepared a powder for making ſalep, nearly reſembling that from Turkey, the alimentary virtues of which are well known.

There are numerous ſpecies, but the moſt remarkable are the following:

[1]ORCHIS *Maſcula.*

*Male Fool-ſtones.*] Hath a root compoſed of two bulbs; crowned with oblong, broad, ſpotted leaves; upright flower-ſtalks, a foot high; garniſhed with one or two narrow amplexicaule leaves; and terminated by a long ſpike of reddiſh-purple flowers, having the petals reflexed backward; a quadrilobed crenated lip to the nectarium, and an obtuſe horn.

The flowers of this ſpecies poſſeſs a very agreeable odour.

It grows wild in meadows and paſtures.

[2]ORCHIS *Morio.*

*Morio, or Female Orchis.*] Hath a double bulbous root; crowned with oblong, ribbed, ſpreading leaves; erect flower-ſtalks, eight or ten inches high; garniſhed with a few amplexicaule leaves; and terminated by a ſhort looſe ſpike of flowers, having connivent petals; a quadrifid crenated lip to the nectarium, and an obtuſe horn.

*Varieties.*] Purple-flowered—red-flowered—violet-coloured——fleſh-coloured——and white-flowered.

It grows naturally in woods and rough places.

[3]ORCHIS *Militaris.*

*Military, or Man Orchis.*] Hath a double bulbous root; crowned with oblong amplexicaule leaves; erect flower-ſtalks, eight or ten inches high; terminated by a looſe ſpike of aſh-coloured and reddiſh flowers, having confluent petals; a quinquefid, rough, ſpotted lip to the nectarium, and an obtuſe horn.

The ſtructure of the flowers exhibit the figure of a naked man; and are often of different colours in the ſame flower, as aſh-colour, red, brown, and dark-ſtriped.

It grows in chalky ſoils, and paſture grounds.

[4]ORCHIS *Bifolia.*

*Bifoliated, or Two-leaved Common Butterfly-Orchis.*] Hath a double bulbous root; crowned with uſually two, or from two to four oblong leaves; upright flower-ſtalks, eight or ten inches high, garniſhed with a few ſmall amplexicaule leaves; and terminated by a looſe ſpike of butterfly-ſhaped white flowers, with ſpreading petals; a ſpear-ſhaped entire lip to the nectarium, and a very long horn.

This is a reſident of rough paſtures, and buſhy places.

[5]ORCHIS *Latifolia.*

*Broad-leaved Handed Orchis.*] Hath a double, bulbous, ſub-palmated or almoſt hand-ſhaped, ſtreight root; upright thick flower-ſtalks, ten or twelve inches high; garniſhed the whole length with long, broad, amplexicaule leaves; and terminated by a ſhort cloſe ſpike of red purple-ſpotted flowers, having a conical-ſhaped horn to the nectari; a trilobate lip reflexed on the ſides, and with bractæa longer than the flowers.

It grows naturally in meadows and paſtures.

[6]ORCHIS *Maculata.*

*Maculated, or Spotted, Handed Orchis.*] Hath a double, bulbous, palmated root, with the diviſions ſpreading wide aſunder; upright, thick, ſpotted flower-ſtalks, a foot or more high, fully garniſhed with long, narrow, dark-ſpotted amplexicaule leaves; and terminated by a cloſe ſpike of flowers, having the hinder part of the petals ſpreading; a plane, trifid, ſpotted lip to the nectari, and the horn ſhorter than the germen.

*Varieties.*] Purple-flowered——deep purple—roſe-coloured—and white flowered.

They are reſidents of moiſt meadows and paſtures.

[7]ORCHIS *Abortiva.*

*Abortive Orchis, or Purple Bird's-Neſt.*] Hath bulbous roots cluſtered together; upright, thick, purple ſtalks, a foot and a half high; ſheathed with narrow purpliſh leaves; and terminated by a looſe thyrſe of purple flowers, having the lip of the nectarium oval and entire.

It grows wild in meadows and ſhady places.

[8]ORCHIS *Conopſea.*

*Gnat Orchis.*] Hath a bulbous palmated root; crowned with long narrow ſpotleſs leaves; upright ſtalks, a foot high; ſheathed with ſhort narrow leaves; and terminated by a long ſpike of red flowers, having two of the petals ſpreading; a triſid-lipped nectarium, and a briſtly horn longer than the germen.

It is an inhabitant of meadows and upland paſtures.

All theſe *Orchiſes* are very hardy perennials, with bulbous fleſhy roots; durable by the root, but annual in leaves and flower-ſtalks;

moſt of them are natives of England, growing wild, ſome ſorts in meadows, woods, and paſtures; others in dry ſterile uncultivated ſoils; but for the ſingularity and beauty of the flowers, are introduced into many curious gardens to encreaſe the variety in the herbaceous collection, and may be procured from the places where they grow ſpontaneouſly, which is in many parts of the kingdom: ſeveral of the ſorts are alſo retained in the public nurſeries for ſale.

They flower in May, June, and July, but principally in June; their mode of flowering is univerſally in ſpikes, many flowers in each ſpike; and each flower is compoſed of five petals in two ſeries, and a nectarium. See the *Characters*.

A few of theſe ſingular plants may be diſpoſed in different parts of the pleaſure-garden, in any of the compartments where they may be the moſt conſpicuous; they, however, are the moſt proſperous in a ſituation and ſoil ſomewhat ſimilar to that where they naturally grow.

The ſeaſon for removing them is in ſummer, after they have done flowering, when their leaves and ſtalks decay: mark this particularly, and it is adviſeable to plant them again as ſoon as poſſible after removal; planting them three inches deep; and let them remain undiſturbed ſeveral years, for the leſs they are removed the ſtronger they will flower.

We formerly obſerved, that the roots of theſe plants were poſſeſſed of very nutritious virtues, particularly for making ſalep. By a late diſcovery communicated to the Royal Society, it appears that the root of the ORCHIS *Maſcula*, with moſt of the other Orchis-roots of our own country, may be prepared a powder to reſemble the *Salep* that comes from Turkey; the alimentary virtues of which, as before obſerved, are well known, as well as its exhorbitant high price, which confines it in a great degree only to perſons of affluent circumſtances; but as many of the ſpecies of *Orchis* are indigenous plants of Britain, growing ſpontaneouſly in moſt parts of the kingdom, and as they flouriſh in almoſt any dry barren ſoil, by a little culture, all ranks of people might in a ſhort time be accommodated with this nutritious vegetable for making ſalep powder; and for encouraging its propagation, the Society of Arts and Sciences in London have lately offered premiums.

Their propagation may be tried both by ſeed and by off-ſets of the roots.

By Seed.—This muſt be very carefully collected in the places where the plants grow naturally; and ſow it directly in the garden, in a border of light earth, and rake it in with a light and even hand; and if it grows freely, the plants may either be thined and remain where ſowed, or when a year or two old, may plant them out in rows a foot aſunder.

By Roots.—As before obſerved, the roots may be procured in plenty from the places of their growth, taking them up when their leaves decay in ſummer, and plant them directly where they are to remain, three inches deep: here they will probably increaſe by off-ſets, like other bulbous roots, which may be taken up every two or three years, at the proper ſeaſon as above, in order to ſeparate the off-ſets, planting the whole again as ſoon as poſſible, placing the off-ſets in beds by themſelves.

When deſigned to cultivate theſe plants for uſe, the roots ſhould be depoſited in beds, in rows ten or twelve inches aſunder, and the depth as above.

ORDO, an Order: the firſt ſub-diviſion of a claſs in the ſexual arrangement of plants; and each claſs is ſubdivided into Orders, or ſecondary diviſions, founded principally on the number of ſtyles or female organs, and ſome other ſtriking part of the fructification of flowers; and the Orders are divided into genera, &c.

Each Order is diſtinguiſhed by a proper name, according to the number of ſtyles, &c. for example, when one ſtyle, it is termed *Monogynia*; two ſtyles, *Digynia*; three, *Trigynia*; four, *Tetragynia*; five, *Pentagynia*; many ſtyles, *Polygynia*, &c. which names of the Orders are always ſubjoined to that of their reſpective claſſes, as well in all the different genera deſcribed in this work, immediately preceding the *Characters*, as under the article CLASSIS, which ſee.

The names of the Orders are often the ſame in different claſſes, becauſe the ſame idea predominates in their inſtitution. See CHARACTERS, CLASSIS, and GENUS.

ORIGANUM, Origany, or Marjoram.

This genus furniſhes ſome under-ſhrubby perennials, and an herbaceous annual; all fine aromatics, ſome for the kitchen-garden, pleaſure-ground, and green-houſe; riſing with upright branchy ſtems, from ſix or eight inches to two feet high, garniſhed with oval and roundiſh leaves, and ſmall monopetalous

talous ringent flowers collected into ſpikes and heads, at the axillas and tops of the ſtalks.

Claſs and order, *Didynamia Gymnoſpermia.*

*Characters.*] CALIX, an involucrum compoſed of oval, coloured leaves, placed imbricatim, with unequal perianthiums. COROLLA, one ringent petal, with a cylindric compreſſed tube, and the upper lip plane and emarginated, the lower one trifid. STAMINA, two long and two ſhort filaments, and ſimple antheræ. PISTILLUM, a quadrifid germen, ſlender ſtyle, and bifid ſtigma. PERICARPIUM, none; four naked ſeeds, lodged in the boſom of the calix.

The principal ſpecies of our gardens, are two hardy perennials, and an annual for the open ground, and five perennials for the green-houſe.

*Hardy Perennial Kinds.*

[1]ORIGANUM *Vulgare*

*Common Origany, or Wild Pot Marjoram.*] Hath a fibrey perennial root; many upright, ſquare, ligneous ſtems, branching half a yard or two feet high; cloſely garniſhed with oval, almoſt cloſe-ſitting, oppoſite leaves, with ſmaller ones from the axillas; and at the ſides and ends of the branches, roundiſh, paniculated, conglomorated ſpikes of ſmall pale-red flowers, having oval bractæa longer than the calix.

*Varieties.*] Purple-flowered—white-flowered—variegated-leaved.

[2]ORIGANUM *Heracleoticum.*

*Heracleotic Origany, or Winter Sweet Marjoram.*] Hath a fibrated perennial root; upright, four-cornered, purpleiſh ſtems, branching half a yard high; garniſhed with oval, obtuſe, hairy, oppoſite leaves, on ſhort foot-ſtalk; and at the axillas of the ſtems, long aggregate ſpikes of ſmall white flowers, having the bractæa as long as the calix.

*Variety.*] Variegated-leaved.

Both the above hardy perennial *Origanums*, are finely-ſcented aromatics, excellent for culinary purpoſes, particularly for broths, ſoups, &c they have likewiſe merit for medical uſes, and for giving fragrance to ointments; ſo that the plants are proper both for kitchen and phyſic-gardens, and may alſo be employed in the pleaſure-ground as plants of variety.

*Annual Kind.*

[3]ORIGANUM *Marjorana.*

*Marjorana, or Annual Sweet Marjoram.*] Hath a fibrous annual root; upright branchy ſtems, riſing a foot or fifteen inches high; ſmall, oval, obtuſe, hoary leaves; and the ſtem and branches terminated by roundiſh, compact, downy ſpikes of ſmall white flowers.

This annual is an aromatic of the higheſt fragrance, is admirable for kitchen uſe, and is excellent for noſegays; ſo is proper both for the kitchen and pleaſure-garden, but more particularly the former.

It is often called knotted Marjoram, from the flowers growing in cloſe knotted-like heads.

*Green-houſe Kinds.*

The following moſtly aſſume an under-ſhrubby growth; frequently with abiding ſtalks, if they have ſhelter here in winter.

[4]ORIGANUM *Dictamnus.*

*Dictamnus, or Dittany of Crete.*] Riſes with ſlender, hairy, purple ſtalks, branching by pairs eight or ten inches high; garniſhed with round thick leaves, the under ones woolly; and the branches terminated by nodding ſpikes of purple flowers.

This ſpecies is a very ſtrong aromatic.

[5]ORIGANUM *Sipyleum.*

*Origanum of Mount Sipylus.*] Riſes with upright, four-cornered, ſmooth, purpleiſh ſtalks, branching by pairs near two feet high; oval ſmooth leaves; and all the branches terminated by oblong nodding ſpikes of purpleiſh flowers.

[6]ORIGANUM *Creticum.*

*Cretan Origany, or Marjoram.*] Riſes with upright, four-cornered ſtems, branching a foot and a half high; oval, obtuſe, hoary leaves; and the ſtalk and branches terminated by long, aggregate, priſmatic ſpikes of ſmall white flowers, having membraneous bractæa double the length of the calix.

[7]ORIGANUM *Smyrnæum.*

*Smyrna Origany.*] Riſes with upright, branchy, hairy ſtalks, a foot and a half high; oval, acutely ſerrated leaves; and umbellate-cluſtered ſpikes of white flowers.

[8]ORIGANUM *Ægyptiacum.*

*Ægyptian Marjoram.*] Riſes with a ſhrubby ſtem, branching a foot and a half high; roundiſh, fleſhy, hollowed, woolly leaves; and the ſtalks and branches terminated by roundiſh, naked ſpikes of pale-red flowers.

All theſe eight ſpecies of *Origanum* flower in July and Auguſt; the flowers are ſmall, monopetalous, ringent, univerſally hermaphrodite, and collected into verticilli round the ſtalks; ſucceeded by ripe ſeed in autumn; though

though in this country the annual Marjoram and the three green-houſe ſorts ſeldom perfect ſeed well, unleſs the autumn proves remarkably fine and warm: in default, however, of ſeed, the propagation of all the perennial ſorts, both hardy and green-houſe kinds, is eaſily effected by ſlips of the roots, &c. And the ſeed of the annual ſort is imported plentifully from France or Italy, by the ſeed-dealers.

Moſt of the ſpecies are remarkable for their agreeable aromatic fragrance and quality.

The firſt three ſorts particularly, have great merit as culinary aromatics for the kitchen-garden, and may alſo be introduced into the pleaſure-ground, in patches in the open borders to encreaſe the variety, and for noſegays, &c. the variegated perennial Marjorams in particular have a pretty effect; they are all eaſily raiſed from ſeed in the open ground in ſpring, and the perennial ſorts alſo by dividing the roots; all of which ſorts, both perennials and annuals, when deſigned for the kitchen-garden, ſhould generally be diſpoſed in four-feet-wide beds, the perennials in rows a foot aſunder, where they will abide for years; and the annual ſort being always raiſed from ſeed annually, it may either remain where ſowed, or the young plants may be planted out in rows ſix or eight inches diſtance; and when deſigned to have any of the ſorts in the pleaſure-garden diſpoſe them about the borders in patches.

But the laſt five ſpecies being exotics from warm countries; they require ſhelter here in winter, ſo muſt be potted and placed in the green-houſe collection, or may be preſerved all winter in a common garden-frame, furniſhed with lights to put on in nights and cold weather.

*Propagation, &c. of all the Sorts.*

Their different methods of propagation are; the hardy perennial ſpecies by ſeed and by ſlipping the roots; the annual ſort only by ſeed annually; and the five green-houſe kinds principally by ſlips and cuttings.

Two Hardy Perennial Sorts.—Both theſe hardy perennials may be propagated by ſeed, and by parting the roots.

By Seed.—This may be had at the ſeed-ſhops: ſow it in ſpring, March or April, in any bed or border of light earth, and rake it in with a light hand; they will ſoon come up: when the ſeedlings are a few inches high, plant them out in moiſt weather, in rows ten or twelve inches diſtance, finally to remain, giving occaſional waterings till freſh rooted.

By Parting the Roots.—Autumn is the beſt ſeaſon, though it may alſo be performed ſucceſsfully in ſpring. Having ſome large plants, ſlip or divide the roots into ſlips, each furniſhed with fibres; which plant in rows, as directed for the ſeedlings, giving occaſional waterings, and they will readily grow, and become good buſhy plants by autumn following.

Their general culture is the keeping them clean from weeds; and every autumn cut down all decayed ſtalks; looſen the earth between the plants; at the ſame time digging the alleys, ſpread a little of the earth over the ſurface of the beds.

When any are intended for the pleaſure-garden, remove them in autumn or ſpring, with little balls of earth about their roots, and plant them where wanted.

Annual Sort.—This plant is raiſed by ſeed only: ſow it annually in ſpring towards the latter end of March, or in April, on a warm dry border, and rake it in; or may be ſowed in ſhallow drills: the plants will ſoon come up, and may either remain where ſowed, thinning them to four or five inches diſtance; or when two inches high may be planted out in moiſt weather, in rows ſix inches aſunder, giving a due ſupply of water till freſh-rooted, and they will ſoon cover the ground, and not need any farther culture.

When any are deſigned for the pleaſure-garden, the ſeed may be ſowed in patches where you would have them remain to flower.

Green-houſe Kinds.—All theſe ſorts are propagated by ſlips or cuttings of the young ſhoots in ſpring and ſummer. If you plant them early, let it be in pots, and plunge them in any hot-bed, they will readily take root; but if in ſummer, they may be planted either in pots, or in a ſhady border. In either mode of planting, give water directly, which repeat as occaſion may require in moderate quantities; and if thoſe that are planted in the open air, either in pots, or in the full ground, are covered down with hand-glaſſes, it will facilitate their rooting; but the glaſſes muſt be removed when the plants begin to ſhoot at top: the plants in either way will be rooted the ſame year; and towards autumn may be potted off ſeparately into ſmall pots, and afterwards managed as other hardy green-houſe exotics.

ORNITHOGALUM, Star of Bethlehem.

This genus compriſes ſeveral herbaceous, bulbous-rooted, flowery perennials, for adorning the pleaſure-garden, and one for the green-

green-houſe collection; having all large bulbous roots, crowned moſtly with long, narrow, carinated, and enſiforme leaves, and upright naked flower-ſtalks annually, riſing from half a foot to a yard high in different ſorts, terminated in long, large ſpikes of hexapetalous, ſtar-ſhaped, white flowers.

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX, none. COROLLA, ſix ſpear-ſhaped petals, erect to the middle, and plane and ſpreading above, and are permanent. STAMINA, ſix erect filaments half the length of the corolla, and ſimple antheræ. PISTILLUM, an angular germen, awl-ſhaped permanent ſtyle, and an obtuſe ſtigma. PERICARPIUM, a roundiſh, angular, trivalvate, trilocular capſule, containing many roundiſh ſeeds.

Of this ſpecies there are cultivated in our gardens about ſix hardy ſpecies for the open borders, and one tender kind requiring ſhelter of a green-houſe, &c. in winter.

*Hard Kinds, for the Open Ground.*

[1]ORNITHOGALUM *Pyramidale.*

*Pyramidical, large-ſpiked, Portugal Star of Bethlehem.*] Hath a very large, oval, bulbous root; crowned with long, keel-ſhaped, dark-green leaves; amidſt them an upright, firm, naked flower-ſtalk, near a yard high; terminating in a very large, long, pyramidal ſpike of numerous, aſcending, white, ſtarry flowers; appearing in June.

[2]ORNITHOGALUM *Pyreniacum.*

*Pyrenean Green-flowered Star of Bethlehem.*] Hath a large onion-like bulbous root; crowned with long, keel-ſhaped, ſpreading leaves; an upright, naked flower-ſtalk, half a yard or two feet high, terminated by a very long ſpike of yellowiſh-green flowers on long ſpreading pedunculi, which as the fruit ripens becomes gradually erect, nearly approaching the ſtalk; flowering in May.

The flowers of this ſpecies poſſeſs an agreeable ſweet ſcent. The plant is a native of the Pyrenian mountains; alſo of England, in ſome meadows, and by way-ſides.

[3]ORNITHOGALUM *Latifolium.*

*Broad-leaved Arabian Star of Bethlehem, ſometimes called Alexandrian Lily.*] Hath a very large, roundiſh, bulbous root; crowned with broad, long, ſword-ſhaped leaves, ſpreading on the ground; an upright, thick, ſtrong, naked flower-ſtalk, two or three feet high; terminating in a long, looſe ſpike of many large, ſtarry, white flowers, on long pedunculi; appearing in June.

This is a hardy exotic of Arabia and Ægypt.

[4]ORNITHOGALUM *Umbellatum.*

*Umbelliferous Star of Bethlehem.*] Hath a large, roundiſh, white, bulbous root; crowned with long, narrow, keel-ſhaped, white-ſtreaked, ſpreading leaves; an upright, naked flower-ſtalk, five or ſix inches high, terminated by taller pedunculi; ſuſtaining a corymboſe umbel of white flowers, having the outſide ſtriped with green; appearing in April and May.

It grows wild in England, &c. in ſome woods and meadows.

[5]ORNITHOGALUM *Luteum.*

*Yellow Star of Bethlehem.*] Hath a ſmall, roundiſh, bulbous root; crowned with two or three narrow, keel-ſhaped leaves; an upright, two-leafed flower-ſtalk, ſix inches high; terminated by a ſimple umbel of yellow flowers; appearing in April.

It grows wild in England, &c. on the borders of uncultivated fields, meadows, and paſtures.

[6]ORNITHOGALUM *Nutans.*

*Nodding Star-flower of Naples.*] Hath a large, compreſſed, bulbous root; long, narrow, keel-ſhaped, dark-green leaves; an upright naked flower ſtalk, about a foot high; terminated by a looſe ſpike of flowers hanging on one ſide, white within, and of a greyiſh-green without, and with a ſtamineous, companulated nectari. Flowering in April and May.

Of the above ſix hardy *Ornithogalums*, the firſt three are the moſt ornamental, and moſt noted ſorts in the Engliſh gardens; the other three are alſo kept in many gardens for variety: all the ſorts are exceeding hardy, and will proſper any where.

*Tender Kind for the Green-houſe Collection.*

[7]ORNITHOGALUM *Capenſe.*

*Cape Ornithogalum.*] Hath a large, irregular, tuberous, dark-brown root; crowned with heart-ſhaped-oval, ribbed leaves, elevated on foot-ſtalks; upright, ſlender, naked ſtalks, about a foot high; terminated by a looſe ſpike of greeniſh-white flowers; appearing in October and November.

It is an exotic from the Cape of Good-Hope.

*Variety.*] With pale-blue flowers.

All theſe plants are perennial in root, but annual in leaves and ſtalks, which in the ſix hardy ſorts riſe annually in the ſpring, and

flower

flower in their proper ſeaſon: the flowers conſiſt univerſally of ſix petals that expand themſelves at top like the figure of a ſtar; and being numerous in each ſpike, are very conſpicuous; and in the tall ſorts make a very ornamental appearance: ſucceeded in all the kinds by plenty of ripe ſeeds in autumn: this, however, is rarely wanted, for the plants propagate exceedingly by off-ſets of the roots, which every ſecond year, in ſummer when they have done flowering, and the leaves and ſtalks decay, may be taken up, and the off-ſets ſeparated for encreaſe.

The ſix hardy ſorts are proper furniture for the pleaſure-garden, placing the larger growing ſorts in the moſt conſpicuous parts, in aſſemblage with other bulbous flowers; planting the ſorts in general three or four inches deep, and they may remain unremoved two or three years, when the roots will be increaſed by off-ſets into large bunches, each exhibiting a large cluſter of flowers.

And if ſome roots of the *Ornithogalum Pyramidale*, &c. are planted in large pots, one root in each, in order for moving occaſionally to adorn any particular compartment, they, when in bloom, will have a fine effect.

The *Ornithogalum Capenſe* muſt be always kept in pots of light earth, for the convenience of moving them to the ſhelter of a green-houſe or garden-frames in winter.

*The Propagation, &c. of all the Sorts.*

The propagation of all the ſorts is effected abundantly by off-ſets of the roots.

The ſix hardy ſorts in particular multiply by off-ſets in great plenty, if they ſtand two or three years, eſpecially the ſmaller ſorts; the larger kinds alſo of ſome ſtanding throw out off-ſets abundantly enough for a plentiful increaſe; and the beſt ſeaſon for removing all the ſorts in order to ſeparate the off ſets is July and Auguſt, when their leaves and ſtalks decay; and the roots may either be planted again in Auguſt or September, or kept till October or November, &c. but remarking the autumnal-planted bulbs will flower much ſtronger than thoſe not planted again till ſpring. Obſerve to plant the off-ſets in nurſery-beds for a year, managing the whole as directed for other hardy bulbs. See BULBUS.

The Cape *Ornithogalum* is alſo propagated by ſlips or off-ſets of the roots, which may be ſlipped when the leaves and ſtalks decay; planting each ſlip or off-ſet in a ſeparate pot of good light earth; and place them to have ſhelter from froſt and exceſſive wet weather in winter, and in the full air in ſummer.

OROBUS, Bitter Vetch.

This genus conſiſts of hardy, herbaceous, fibrous-rooted, very floriferous perennials for the embelliſhment of the pleaſure-garden; riſing with erect ſtems, from about one to two feet high, ornamented with winged leaves of from two to ſeveral pair of lobes; and at the axillas and top of the ſtalks, looſe ſpikes and cluſters of papilionaceous, purple and blue flowers of ornamental appearance.

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX, is monophyllous, tubular, and five-parted at the top. COROLLA, is papilionaceous, with a heart-ſhaped ſtandard, two long connivent wings, a bifid, aſſurgent, acuminated keel, ſwoln at the baſe. STAMINA, ten diadelphous filaments, and oblong antheræ. PISTILLUM, a cylindric compreſſed germen, a bent ſtyle, and narrow downy ſtigma. PERICARPIUM, a long, taper, acute, unilocular pod, having many roundiſh ſeeds.

The plants of this genus are moſtly natives of woods and commons in different parts of the world; but ſeveral of the ſorts are retained in gardens for the beauty of their flowers.

The moſt material ſpecies are the following ſeven.

[1]OROBUS *Vernus.*

*Vernal Orobus.*] Hath ſtrong fibrated roots; upright ſimple ſtalks, riſing a foot high; garniſhed with pinnated leaves of two pair of oval lobes, attended by half-arrow-pointed, entire ſtipula; and at the axillas ſhort ſpikes of flowers of different colours in the varieties; appearing in March.

*Varieties.*] Purple-flowered ſpring *Orobus*—deep blue-flowered—pale blue-flowered.

[2]OROBUS *Tuberoſus.*

*Tuberous-rooted Orobus, ſometimes called Wood Pea.*] Hath a tuberous, knotty, creeping root; upright, angular, ſimple ſtems, about a foot long; pinnated leaves, of four pair of lanceolate lobes, attended by half-arrow-pointed ſtipula; and at the axillas long pedunculi, each having two or three reddiſh flowers; appearing in April and May.

It is a reſident of ſhady woods in England and other countries.

[3]OROBUS *Lathyroides.*

*Lathyroides, or Baſtard Lathyrus.*] Riſes with upright branchy ſtems about a foot high; con-

conjugated, almoſt cloſe-ſitting leaves, having indented ſtipula; and at the axillas ſhort pedunculi, each terminated by a ſhort ſpike of bright blue flowers.

4 OROBUS *Lunata.*

*Lunated Siberian Orobus.*] Riſes with upright, unbranching ſtalks, a foot and a half high; pinnated leaves, of four or five pair of oval-oblong lobes, attended by broad lunated or moon ſhaped ſtipula; and at the axillas ſhort pedunculi ſupporting large purple flowers; appearing in April.

5 OROBUS *Sylvaticus.*

*Sylvian, or Wood Orobus.*] Riſes with decumbent, branching, hairy ſtalks, a foot and a half long; winged leaves of ſeven pair of lobes; and at the axillas cloſe ſpikes of purple flowers; appearing early in June.

This grows naturally in woods in ſeveral parts of England.

6 OROBUS *Niger.*

*Black Orobus.*] Riſes with upright branchy ſtems, two feet high; pinnated leaves, of ſix pair of oval-oblong lobes; and at the axillas long pedunculi, each ſupporting ſeveral purple flowers; appearing in May.

7 OROBUS *Pyreniacus.*

*Pyrenean Orobus.*] Riſes with upright, branchy ſtems, a foot and a half high; pinnated leaves, of two pair of ſpear-ſhaped nervous lobes; and at the axillas long pedunculi, terminating in looſe ſpikes of purple flowers; appearing in May.

All theſe ſeven ſpecies of Orobus have ſtrong fibrated roots, which are perennial, but are annual in ſtalk; riſing early in ſpring and decay in autumn.

They are all very hardy plants, and proſper in any common ſoil of a garden.

Moſt of the ſorts are very floriferous, and the flowers conſpicuous and ornamental for adorning the flower compartments; the flowers are univerſally of the papilionaceous or butterfly kind, conſiſting each of four irregular petals, i. e. a ſtandard, two wings, and a keel; and are all ſucceeded by long taper ſeed-pods, furniſhing plenty of ripe ſeed in autumn; by which the plants may be propagated abundantly, as alſo by parting the roots.

With reſpect to their merit in gardens, they may be employed in any of the compartments of the pleaſure-ground as flowery plants: they will flouriſh any where and exhibit a pretty variety when in flower.

*Their Propagation, &c.*

Their propagation is by ſeed and by parting the roots.

By Seed.——All the ſorts furniſh plenty: ſow it in autumn, i. e. September, or beginning of October, or early in ſpring, in any bed or border, and rake them in, and thoſe of the autumn-ſowing will readily come up in ſpring; but thoſe of the ſpring-ſowing do not come up ſo freely: as the plants advance, clear them from weeds, and give occaſional waterings; and in June or July, when a few inches high, prick them out, in moiſt weather, in nurſery-rows half a foot aſunder, to remain to gain ſtrength till October or November, then tranſplant them where they are to remain.

By parting the Roots.——Autumn, when their ſtalks decay, is the beſt time for this: having recourſe to ſome large plants, divide the roots into ſlips, each furniſhed with fibres, and plant the largeſt at once where they are to remain; and the ſmalleſt may be planted in nurſery-rows for a year.

OSTEOSPERMUM, Hard-ſeed, commonly called Hard ſeeded *Chryſanthemum.*

This genus furniſhes ſhrubby exotics for the green-houſe collection, riſing with ſhrubby durable ſtems, branching ſeveral feet high, garniſhed with oval and ſpear-ſhaped leaves; and the branches terminated by yellow compound flowers.

Claſs and order, *Syngeneſia Polygamia Neceſſaria.*

*Characters.*] CALIX, a compound flower, having a ſimple, hemiſpherical, many-parted cup. COROLLA, a compound radiated flower, of many ſmall florets, being funnel-ſhaped, males or hermaphrodites in the diſk or middle, and flat tongue-ſhaped females in the radius. STAMINA, in the hermaphrodites five very ſhort filaments, and cylindric antheræ. PISTILLUM, in the hermaphrodites a ſmall germen, ſlender ſtyle, and obſolete ſtigma, and in the females a globular germen, ſlender ſtyle, and an emarginated ſtigma. PERICARPIUM, none, in each female floret a ſingle ſeed, as hard as bone.

The plants of this genus are moſtly natives of Africa, and require ſhelter of a green-houſe here in winter.

The ſpecies are:

1 OSTEOSPERMUM *Moniliferum.*

*Moniliferous Æthiopian Oſteoſpermum.*] Hath a ſhrubby ſtem, branching ſix or eight feet high,

high, having a ſmooth grey bark; oval, ſerrated, thick, hoary, alternate leaves, on decurrent foot-ſtalks; and the branches terminated by cluſters of yellow flowers.

[2]OSTEOSPERMUM *Piſiferum.*

*Piſiferous Cape Oſteoſpermum.*] Hath a ſhrubby ſtem, branching ſeven or eight feet high, having ſoft woolly branches; ſpear-ſhaped, pointed, ſerrated, ſmooth leaves, on very ſhort, bordered foot-ſtalks; and the branches terminated by cluſters of yellow flowers.

[3]OSTEOSPERMUM *Spinoſum,*

*Spinous African Oſteoſpermum.*] Hath a low ſhrubby ſtem, branching three or four feet high, armed with branchy ſpines; oblong, narrow, clammy leaves, placed irregularly; and the branches terminated by yellow flowers ſingly.

[4]OSTEOSPERMUM *Polygaloides.*

*Polygaloide Æthiopian Oſteoſpermum.*] Hath a ſhrubby ſtem, branching four or five feet high; ſpear-ſhaped, entire, ſmooth, decurrent leaves, placed almoſt imbricatum; and the branches terminated by yellow flowers ſingly.

All theſe *Oſteoſpermums* are durable in root, ſtem and branches, retaining their leaves moſt part of the year: the firſt ſort is that which is the moſt common in the Engliſh gardens. They flower in ſummer; the flowers are univerſally compound and radiated; rarely ſucceeded by good ſeeds in England.

The plants muſt always be kept in pots for moving to ſhelter of a green-houſe in winter, and managed as myrtles and other green-houſe ſhrubs.

Their propagation is by cuttings any time in ſummer. Chuſe the young ſhoots, which plant in pots, ſeveral in each, giving water and occaſional ſhade, for a month or ſix weeks, when they will be rooted; and before winter ſhould be potted off ſeparately, and placed among the other green-houſe exotics.

OTHONNA, African Ragwort.

The plants of this genus are ſhrubby and underſhrubby ever-green exotics of Africa, for the green-houſe, riſing from about two to four or five feet high, ornamented with pinnatifid and entire ſpear-ſhaped leaves, and the branches terminated by compound radiated yellow flowers.

Claſs and order, *Syngeneſia Polygamia Neceſſaria.*

*Characters.*] CALIX, a compound radiated flower, having a ſingle monophyllous cup, divided into eight or twelve parts. COROLLA, a compound radiated flower, of numerous ſmall florets, the middle or diſk compoſed of many tubular hermaphrodite florets, and the ray of eight or twelve flat, tongue-ſhaped, tridented, female florets. STAMINA, in the hermaphrodite florets five ſhort filaments, and long cylindric antheræ. PISTILLUM, an oblong germen, ſlender ſtyle, and in the hermaphrodites a ſimple bifid ſtigma, which in the females is large and reflexed. PERICARPIUM, none, each female floret is ſucceeded by one oblong ſeed, crowned with down, lodged in the permanent calix.

The moſt noted ſpecies are;

[1]OTHONNA *Pectinata.*

*Pectinated-leaved Othonna.*] Hath a ſhrubby ſtem, branching numerouſly two or three feet high, the branches covered with a hoary down; oblong, pinnatifid, hoary, white leaves, being cut pinnatifid-wiſe almoſt to the mid-rib, into many narrow parallel ſegments, arranged in a pectinated manner, or reſembling the teeth of a comb; and at the axillas and ends of the branches long pedunculi, terminated by large yellow flowers, with ſpreading rays.

[2]OTHONNA *Abrotanifolia.*

*Abrotanum-leaved Othonna.*] Hath a low, ſhrubby, jointed ſtem, branching about two feet high; thick, finely multifid-pinnated, ſouthernwood-like leaves; and the branches terminated by yellow flowers.

[3]OTHONNA *Coronopifolia.*

*Coronopus-leaved Othonna.*] Hath a ſhrubby ſtem, branching four or five feet high; ſpear-ſhaped, narrow lower leaves, the upper ones ſinuated and indented; and the branches terminated by umbellate cluſters of yellow flowers.

Theſe ſhrubs flower in ſummer and autumn: the flowers are in general compound and radiated, continuing in ſucceſſion two or three months, but are rarely ſucceeded by good ſeed in our gardens.

They are proper furniture for the green-houſe collection, and being tender muſt always be kept in pots for moving to ſhelter in winter; they will have a very pretty effect in this collection, both by their mode of growth, leaves, and flowers: managing them generally as directed for other ſhrubby exotics of the green-houſe. See GREEN-HOUSE PLANTS.

Their propagation is by ſlips and cuttings of the young ſhoots, planted any time in ſummer,

ſummer, before the latter end of July, either in pots, or in a bed or border, watered and ſhaded occaſionally from the ſun, till rooted, which they will effect the ſame ſeaſon; or if they are covered cloſe with hand-glaſſes and ſhaded, it will facilitate their rooting: early in autumn pot them ſeparately, and manage them as other green-houſe ſhrubs.

# P.

PÆONIA, Peony.

This genus furniſhes large herbaceous flowery perennials, moſtly of the tuberous-rooted kind; having roots compoſed of large fleſhy tubers, ſending up ſtrong annual ſtalks, from one or two to three feet high; garniſhed with large, many-lobed, ſpreading leaves; and terminated by very large, pentapetalous, polyandrous flowers.

Claſs and order, *Polyandria Digynia.*

*Characters.*] CALIX, five roundiſh, concave, reflexed, equal leaves. COROLLA, five large, roundiſh, concave, ſpreading petals. STAMINA, numerous ſhort capillary filaments, and large, oblong, quadrangular, erect antheræ. PISTILLUM, two or three downy germina, no ſtyles, but oblong compreſſed obtuſe, coloured ſtigmas. PERICARPIUM, two or three oval-oblong, ſpreading, reflexed, downy, univalvular, unilocular capſules, having many oval ſeeds.

There are only two ſpecies, one of which, however, common Peony, admits of many elegant varieties, with both ſingle and double flowers; but the doubles being remarkably large, and the petals multiplied in many ſeries to the very centre, are conſiderably more beautiful and eſtimable than the ſingles, which have only five petals, according to their *characteriſtic* deſcription; but the petals are innumerable in the double varieties, forming a fine full flower; much larger than the biggeſt double roſe.

The ſpecies are;

[1]PÆONIA *Officinalis.*

*Common Officinal Peony.*] Hath a large root, compoſed of many thick fleſhy tubers, hanging by ſtrings to the main head; upright, round, robuſt, ſmooth ſtalks, branching half a yard or two feet high, or more; garniſhed with very large, many-lobed leaves, compoſed of oblong-oval folioles, ſpreading widely all around; and the ſtalk and branches terminated by large, deep-red flowers ſingly, having numerous ſtamina, with yellow antheræ; ſurrounding two, three, or more germina, ſucceeding to ſo many capſules, opening longitudinally, and diſcover their ſeed, gradually ripening to a dark-purple, or blackiſh colour. Flowering in May and June.

Of this ſpecies there are two noted varieties, called, Male Peony, and Female Peony; each of which comprehending alſo ſome varieties, viz.

*Male Peony.*]—Hath lobated, dark-green leaves, having large oval folioles cut on the ſides; and very large, ſingle, red flowers; ſucceeded by capſules remarkable for turning backward, opening and diſplaying their red inſide, together with the numerous ſeeds in a ſingularly agreeable manner, appearing very ornamental after the flower is paſt.

*Female Peony.*]—Hath unequally lobated pale-green leaves, with narrow lobes, more frequently cut on the edges, and ſmaller deep-purple flowers.

*Of theſe two principal Varieties are the following;*] Double red-flowered—double deep-red-flowered—double purple-flowered—double roſe-coloured—double white-flowered—double black-flowered——Portugal deep-red ſweet-ſcented Peony——Conſtantinople large blood-red Peony—dwarf white Peony.

All theſe ſorts, conſidered as flowery plants, are very ornamental in their flowers, particularly the doubles.

The plants have alſo great merit for medical uſes.

PÆONIA *Tenuifolia.*

*Narrow-leaved Peony.*] Hath a thick, fleſhy, creeping root; upright unbranching ſtalks, riſing a foot and a half high; ſmalliſh multipartite leaves, having the lobes divided into a multitude of narrow ſegments; and the ſtalks terminated by red flowers placed ſingly.

Both theſe ſpecies of *Pæonia*, and all the varieties, are perennial in root, but annual in ſtalk and leaves; riſing in ſpring, form large buſhy plants, having the flowers erect in the midſt of them; and wholly die gradually to the ground at the approach of winter.

They flower in May and June, continuing in beauty a month or ſix weeks: the flowers are very large in the firſt ſpecies and varieties; and in their ſingle or *characteriſtic* ſtate, in all the ſorts, conſiſt of five large roundiſh petals; but in the doubles the petals are multiplied in many ſeries inward to the centre, forming very large full flowers, which in moſt of the ſorts are ſucceeded by plenty of ripe ſeed in autumn, by which the plants may be raiſed in the common ground in great abundance, as well as by off-ſets of the roots. See their *Propagation*.

All the ſorts are hardy plants that will flouriſh in any common ſoil of a garden in almoſt any ſituation, either in open expoſures, or under ſhade of trees, &c. and will abide by the roots a great number of years, flower annually, and encreaſe exceedingly by off-ſets for propagation.

They are proper ornaments as flowery plants, for large borders and other compartments, and may be had at all the public nurſeries. Obſerving that the beſt ſeaſon for removing them is in autumn, when their ſtalks and leaves are decayed; planting one here and there in different parts, placing them with the crown of the root a little within the ſurface of the earth, and at a yard at leaſt diſtance from other plants, for they extend themſelves widely every way, aſſuming a large buſhy growth; which, together with their conſpicuous large flowers, exhibit a fine appearance.

After the flowers are gone, the capſules opening lengthways, diſcover their coloured ſeeds very ornamentally, eſpecially the Male Peony and varieties; and to forward this, ſome ſlit the capſules open on the inſide at the proper valve, whereby they will expand much ſooner, and diſplay their beautiful ſeed.

The plants may be ſuffered to remain ſeveral years unremoved, till the roots are encreaſed into very large bunches, and may then be taken up, when the ſtalks decay, in autumn, and divided.

*Their Propagation, &c.*

Their propagation is effected moſt commonly by dividing the roots; but they may alſo be raiſed abundantly from ſeed.

By dividing the Roots.—The roots multiply faſt by off-ſets; and the beſt time for removing and ſeparating them is Auguſt and September. When the ſtalks are decayed, then the whole root may be taken up and divided, each ſlip or off-ſet, having at leaſt one eye or bud at its crown, will make a proper plant. I would not, however, adviſe dividing them into very ſmall ſlips, unleſs when as great an encreaſe as poſſible is wanted: in which caſe they may be divided as ſmall as may be, provided each ſet is crowned with one or more buds; and in either caſe it is adviſeable they be all planted again ſoon after; for although theſe roots, if removed at the proper time as above, may upon occaſion be kept out of the ground ſome time, yet when planted again ſoon after their removal, they will flower much ſtronger; obſerving, you may plant the larger off-ſets at once where they are to remain; and the ſmaller ones in nurſery-beds to ſtand a year or two to gain ſtrength, then tranſplanted into their places of final deſtination.

By Seed.—All the ſingle-flowered kinds in particular produce plenty, and from which both ſingle and double-flowered plants are obtained. Autumn, ſoon after the ſeed is ripe, is a very ſucceſsful ſeaſon for ſowing; though it may alſo be performed in ſpring, and may be ſowed in any bed or border of light earth, either by broad-caſt, and raked in, or in ſhallow drills, ſix inches aſunder, covering the ſeeds half an inch deep: they will readily come up in April or May; keep them clean from weeds, and give moderate waterings in dry weather; and as it is proper they ſhould remain two ſeaſons in the ſeed-bed, it is adviſable in autumn to ſpread an inch depth of light earth over the ſurface of the bed: the next year, in September, tranſplant them where they are to remain.

PANCRATIUM *(Pancratium Lily)* Sea Daffodil.

This

This genus conſiſts of large bulbous-rooted, herbaceous, flowery perennials, of very ornamental appearance for the pleaſure-ground and ſtove collection, having very large bulbous roots, crowned with long leaves, ſome very narrow, others broad; and upright robuſt flower-ſtalks, from one to two or three feet high, terminated by a large ſpatha, or ſheath, protruding ſome many, others but one or two hexapetalous, liliaceous, white flowers, of great beauty and fragrance.

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX, an oblong ſpatha, opening on one ſide, protrudes many flowers, and withers. COROLLA, ſix ſpear-ſhaped petals, and in the middle a monopetalous, funnel-ſhaped nectarium, ten or twelve-parted, and ſpreading at top. STAMINA, ſix awl-ſhaped filaments inſerted into the brim of the nectarium, and oblong incumbent antheræ. PISTILLUM, an obtuſe trigonal germen under the corolla, long filiforme ſtyle, and an obtuſe ſtigma. PERICARPIUM, a roundiſh, trigonous, trilocular capſule, having many globular ſeeds.

Of this genus there are two hardy ſpecies for the pleaſure garden, and five tender kinds for the ſtove.

*Hardy Kinds.*

[1]PANCRATIUM *Maritimum.*

*Maritime Pancratium, or Common Sea Daffodil.*] Hath a very large, oblong, bulbous, dark-coated root; crowned with tongue-ſhaped leaves a foot-long, encompaſſed at bottom with a ſort of ſheath; amidſt them an upright, robuſt, naked flower-ſtalk, a foot and a half high, ſurmounted by a multiflorous ſpatha, protruding ſeveral large white flowers, having plane petals. Flowering in the latter end of Auguſt or in September.

It grows naturally on the ſea-coaſt of France and Spain.

[2]PANCRATIUM *Illyricum.*

*Illyrian Multiflorous Pancratium.*] Hath a large, oval, bulbous, dark-coated root; crowned with ſword-ſhaped leaves, a foot and a half long, and two inches broad; an upright, thick, ſucculent, naked flower-ſtalk, near two feet high; terminated by a multiflorous ſpatha, protruding ſix or eight white flowers, having the ſtamina longer than the nectarium. Flowering in June and July.

Both theſe hardy *Pancratiums* proſper in the open ground, but muſt have a warm dry ſituation, and a light ſoil, and ſheltered occaſionally from ſevere froſt, where they will abide for many years by the root, renewing their leaves and flower-ſtalks annually, and encreaſe freely by off-ſets.

*Tender Kinds for the Hot-houſe.*

Theſe ſorts being tender exotics from the warm parts of the Indies, in this country muſt be kept in pots, in order for being placed always in the hot-houſe, where they will exhibit their beautiful fragrant flowers at different times of the year.

[3]PANCRATIUM *Zeylanicum.*

*Ceylon Uniflorous Pancratium.*] Hath a large oval, bulbous root, crowned with narrow erect leaves, a foot long; an upright, firm, naked flower-ſtalk, fifteen or eighteen inches high, terminated by a uniflorous ſpatha, protruding one large white flower, having reflexed petals.

[4]PANCRATIUM *Mexicanum.*

*Mexican Biflorous Pancratium.*] Hath a large bulbous root; crowned with furrowed leaves, a foot long, and two or three broad; an upright naked flower-ſtalk, about a foot high; terminated by a biflorous ſpatha, protruding two large white fragrant flowers.

[5]PANCRATIUM *Caribbæum.*

*Caribbæan Multiflorous Pancratium.*] Hath a very large bulbous root; crowned with ſpear-ſhaped, moderately-broad, longitudinally-ribbed leaves; an upright, thick, firm, naked flower-ſtalk, two feet high, or more; terminated by a multiflorous ſpatha, protruding many very large, white, fragrant flowers.

[6]PANCRATIUM *Amboinenſe.*

*Amboyna Broad-leaved Multiflorous Pancratium.*] Hath a large, oval, white, bulbous root; crowned with oval, nervous, or deeply ribbed leaves, ſeven or eight inches long, and five or ſix broad, growing on ſhort foot-ſtalks; and an upright, thick, naked flower-ſtalk, near two feet high, terminated by a multiflorous ſpatha, protruding many large white flowers.

*Variety.*] With broad, oval, acuminated leaves, and very fragrant flowers.

[7]PANCRATIUM *Carolinianum.*

*Carolina Multiflorous Pancratium.*] Hath a roundiſh, bulbous root; crowned with very narrow leaves, a foot long; and an upright, robuſt, naked flower-ſtalk, eight or nine inches high, terminated by multiflorous ſpatha, protruding ſeveral flowers, having the ſtamina as long as the nectarium.

All

All theſe plants are perennial in root, but annual in ſtalk, which always decay ſoon after the flower is paſt.

Their ſeaſon of flowering is different, the two hardy ſorts flower here pretty conſtantly at the times mentioned in their deſcription; and as to the tender kinds, they often exhibit their flowers in our ſtoves in the middle of winter, ſometimes in ſpring, ſummer, and autumn; and ſometimes they flower two or times a year, ſo that one or other of them exhibit flowers at almoſt all ſeaſons. The flowers of all the ſorts conſiſt each of ſix petals, and a monophyllous nectarium in the centre, and are very ornamental, and moſt of them exceedingly fragrant; but rarely any of the ſorts, except the *Pancratium Illyricum*, furniſh ripe ſeeds in theſe parts.

They all encreaſe in tolerable plenty in root by off-ſets for propagation.

All the ſorts have great elegance in their flowers, and moſt of them are enriched with a delightful fragrance, and demand our attention for culture in the pleaſure-garden and ſtove.

The two hardy ſorts are proper for the pleaſure-garden, but ſhould have a warm dry ſituation, and light ſoil: the ſeaſon for planting them is autumn, that is, the roots being taken up when their leaves decay, ſhould be planted again ſoon after; placing them about four inches deep, and they will flower the year following; ſuffering the roots to remain unremoved two or three years; when they will be encreaſed by off-ſets, and ſhould be taken up and ſeparated. See their *Propagation*.

Obſerve, in ſevere froſts it will be proper to cover the ground over the roots with litter, to protect them.

The five tender ſpecies muſt be planted in large pots, and placed in the hot-houſe: the ſeaſon for planting and tranſplanting them is when their leaves decay: obſerve this, and plant one root in each pot, which plunge in the bark-bed of the ſtove, where let them always remain; and here they will flower ſtrong at their uſual ſeaſons, and multiply exceedingly by off-ſets.

*Propagation of all the Sorts.*

All the ſorts are propagated by off-ſets of the root, like other bulbs, which may be ſeparated every ſecond or third year, or according as they multiply; the proper time for which is when their leaves decay; planting the off-ſets of the hardy ſorts in nurſery-beds for a year, then tranſplanted where they are to remain; and thoſe of the tender kinds plant in ſeparate pots, plunging them in the bark-bed. Thoſe of all the ſorts will flower in perfection the ſecond year, and in their turn furniſh a proper ſupply of off-ſets for encreaſe.

PAPAVER, Poppy.

The plants of this genus are hardy, herbaceous, fibrous-rooted, flowery plants; principally annuals and perennials, for ornament in gardens, and for medicinal uſe; riſing with upright ſtalks, from one to three feet high, garniſhed with large, deeply jagged and pinnatifid leaves, and terminated by large tetrapetalous polyandrous flowers.

Claſs and order, *Polyandria Monogynia.*

*Characters.*] CALIX, is oval, and compoſed of two oval, concave, indented leaves that ſoon fall of. COROLLA, four large, roundiſh, plane, ſpreading petals. STAMINA, numerous ſhortiſh filaments, and oblong, compreſſed erect antheræ. PISTILLUM, a large roundiſh germen, no ſtyle, but the germen crowned by a target-ſhaped, plane, radiated ſtigma. PERICARPIUM, a very large, roundiſh, or oval, unilocular capſule, crowned with a plane ſtigma, opening under it in ſeveral places, and is filled with numerous ſmall ſeeds

There are eight or nine ſpecies, and of which four only have claim to attention as garden plants; two annuals, and two perennials: the two former of which compriſe many varieties in reſpect to the ſize, various colourings, variegations, and doubleneſs of their flowers, ſome of which are very beautiful, though all of them rather of a diſagreeable ſcent, and of ſhort duration: the plants, however, are deſigned by nature for excellent purpoſes in medicine; and both the annual and perennial kinds may be employed to encreaſe variety in the pleaſure-garden; they are all very hardy and proſper any where.

*Annual Kinds.*

1 PAPAVER *Somniferum.*

*Somniferous common Garden Poppy.*] Riſes with an upright ſmooth ſtalk, dividing and branching a yard or more high; garniſhed with large, deeply jagged, amplexicaule, ſmooth leaves; and terminated by large, ſpreading, dark-purple, and other coloured flowers in the varieties, having ſmooth cups and capſules. Flowering in June and July.

The

The varieties of this ſpecies are numerous; many of which have great beauty, both in their amazing ſize, doubleneſs. and colourings.

*Varieties of this are.*] Double purple-flowered——double red-flowered——double white-flowered—double variegated purple-and-white-flowered—double variegated red-and-white-flowered—-double red-and-white ſpotted-flowered, or carnation Poppy—double curled-flowered—double fringed-flowered—double feather-flowered—and alſo with ſingle flowers of each ſort.

Obſerve that as there are both ſingle and double flowers of all the above varieties, the ſingles having only four petals, have no merit as garden-flowers; but the double kinds being very large, and the petals numerous, forming a handſome full flower, exhibit a good variety in a garden: the flowers, however, are but of very ſhort duration, and in general of a diſagreeable ſcent.

Moſt of the varieties of this ſpecies are of a ſomniferous nature, i. e. cauſing ſleep: hence it is termed PAPAVER *Somniferum.*

The white officinal Poppy, a variety of this ſpecies, is the principal medicinal ſort; it often grows five or ſix feet high, having large flowers, both ſingles and doubles, ſucceeded by very large heads, or capſules, as big as oranges, filled with very numerous ſeeds (about 8000); and the heads are greatly uſed in medicine; of which is made the *diacodium* of the ſhops; likewiſe from the heads is extracted the *opium* in Turkey; and any part of the plant boiled in water, and ſweetened with ſugar, cauſes ſleep; but ſhould be uſed with caution, becauſe too large a quantity brings on death. The ſeed is alſo good in fevers and inflamatory diſorders; ſo that this variety in particular is propagated in great plenty for ſupplying the ſhops.

All the varieties are raiſed commonly from ſeed in the open ground.

[2]PAPAVER *Rhœas.*

*Rhœas, or Wild Globular-headed Poppy.*] Riſes with an upright, hairy, multiflorous ſtalk, branching a foot and a half high; garniſhed with long, pinnatifid, deeply-cut, hairy leaves; and the ſtalk terminated by many red and other coloured flowers in the varieties; ſucceeded by globular ſmooth capſules. Flowering in June.

This ſpecies is the wild red Poppy of the fields, but being improved by garden-culture, many varieties of different beautiful colours, and exceeding doubleneſs, have been obtained.

*Varieties are.*] Double red-flowered——double purple-flowered—double white-flowered—double variegated-flowered of many fine-coloured varieties——and with ſingle flowers of all the above colours and variegations.

Of the above varieties of this ſpecies, the double kinds only merit attention as flower-plants; the variegated ſorts in particular are very beautiful; but all the flowers of the varieties, like thoſe of the ſomniferous kind, are but of ſhort duration.

*Perennial Kinds, with durable Roots, but annual Stalks.*

[3]PAPAVER *Cambricum.*

*Cambrian, or Welſh Poppy.*] Hath a perennial root; crowned with pinnated, cut leaves; upright, ſmooth, multiflorous ſtalks, a foot and a half high; garniſhed with ſmall pinnated leaves; and terminated by many large yellow flowers; ſucceeded by oblong, ſmooth capſules. Flowering in June.

It grows ſpontaneouſly in Wales and ſome other parts of Britain.

[4]PAPAVER *Orientale.*

*Oriental Poppy.*] Hath a large, thick, perennial root; crowned with long, pinnated, ſawed leaves; upright, rough, uniflorous ſtalks; terminated each by one large, deep-red flower; ſucceeded by oval ſmooth capſules. Flowering in May.

*Variety.*] With double flowers.

All theſe ſpecies of *Papaver* flower principally in June and July, except the oriental kind, which commonly flower in May: the flowers of all the ſorts are large, particularly the annuals, and in their ſingle ſtate, conſiſt each of four large, roundiſh petals; but the double flowers are compoſed of numerous petals, in ſeveral degrees of luxuriance in different varieties, and in all the ſorts are ſucceeded by very large roundiſh capſules filled with numerous very ſmall ſeeds, ripening in autumn.

As to their merit as garden-plants and propagation, obſerve as follow:

Annual Sorts.—Both theſe ſorts furniſhing many varieties with ornamental flowers, the doubles of which in particular make a pretty appearance in the compartments of the pleaſure-garden, when diſpoſed here and there in patches, ſo that we ſhould procure ſeed of the fineſt doubles only, which may be ſowed in autumn or ſpring, at once where the plants are to

to remain, in patches as above, covering it near a quarter of an inch deep; and when the plants are come up an inch or two high, thin them where too thick, to three or four in each patch: here they will flower abundantly; obſerving, when the flowers appear, to cut out all ſuch plants whoſe flowers are of bad colours, and all ſingles and half doubles; leaving only the fine full double flowers: thus by preſerving only the beſt flowers, the blow will be ornamental; and will ripen plenty of ſeed, which, if permitted to ſcatter, numbers of plants will riſe naturally.

The flowers, however, of all theſe annuals are but of a ſhort continuance, which in very hot weather, are often but of one day's duration, but are ſucceeded by others on the ſame plant; the large doubles having numerous petals, they, by falling daily, cauſe a littering appearance.

When deſigned to cultivate the ſomniferous kinds for uſe, may ſow the ſeed by broadcaſt, in any open ground, and rake them in; and when the plants are three inches high, hoe them out to a foot diſtance, there to ſtand to perfect their ſeeds.

Perennial Sorts.—Both theſe ſorts are employed to form variety in large gardens; they may be placed any where, and plants of both ſorts may be procured at the nurſeries: in autumn or ſpring, planting them directly where they are to remain.

Theſe two ſorts may be propagated by ſeed and by parting the roots.

By Seed.—Sow it in autumn, or early in ſpring, in any bed or border, and rake it in; when the plants are three or four inches high, plant them out in nurſery-rows to remain till autumn, then tranſplant them where they are finally to remain, and will flower in ſummer following.

By Roots.—In autumn or early in ſpring you may ſlip the roots, preſerving fibres to each ſlip, which planted become proper plants, and will flower the following ſeaſon.

PANICULA, Panicle; a mode of flowering, in which the common flower-ſtalk branches into ſeveral ſmaller, diſperſed along its ſides; and theſe ſmaller ones are again variouſly ſub-divided into others; each diviſion ſupporting flowers and fruit, hanging looſely; ſuch as a head of oats, and many other plants.

A Panicle is of two ſorts, diffuſe, and coarctate.

A diffuſe Panicle (*Panicula diffuſa*) is when the partial flower-ſtalks, or pedicles, diverge, and the fructifications hang looſe, ſo as to form in the whole a ſpreading looſe panicle.

A coarctate Panicle (*Panicula coarctata*) is when the pedicles approach pretty cloſe together, ſo as to form a narrow ſtraight panicle.

PAPILIONACEUS *Flos*; a butterfly-ſhaped flower, ſuch as all the pea-bloom kinds. See COROLLA *Papilionacea*.

A Papilionaceous, or butterfly-ſhaped flower, conſiſts of four or five very irregular petals; and from their figure and poſition, bear an obvious reſemblance in moſt of the genera, to a butterfly expanding its wings for flight; exemplified in all the ſorts of pea, bean, kidney-bean, laburnum, &c.

The different petals of a Papilionaceous flower are characterized by diſtinct names; the upper one commonly the largeſt, and ſtanding erect, is termed the ſtandard, (*vexillum*;) the two ſide petals the wings, (*alæ*;) and the lowermoſt, which is generally concave, and united and divided at bottom, is called the keel, (*carina*,) from its reſemblance to the keel of a boat; is ſometimes of one petal, and ſometimes two united.

Plants of the Papilionaceous tribe conſiſt both of herbaceous plants and trees; and are of the claſs and order *Diadelphia Decandria*. See CLASSIS.

Some Papilionaceous flowers are of various ſizes in different plants; ſome have very large petals, others middling, and others very ſmall; and ſome are furniſhed with the ſtandard only, as in the genus *Amorpha*; and in ſome the different petals are ſo ſituated as to form the appearance of a regular flower, whereby the Papilionaceous, or butterfly-ſhape, is not very conſpicuous; far the greater part, however, have all the proper petals, repreſenting the above form.

All the Papilionaceous flowers are hermaphrodite, and have commonly ten united ſtamina, generally *Diadelphous*, or of two ſets; one ſet is compoſed of nine ſtamina in one crooked body, terminated by nine antheræ; and the ſecond ſet conſiſts of one filament only, lying along the cliſt of the large bundle; ſometimes ſeparate, or totally diſtinct, and ſometimes pretty cloſely attached: in the midſt is a ſlender crooked ſtyle, crowned by a downy

ſtigma,

ſtigma; ſucceeded by that ſort of ſeed-pod termed legum (*legumen*) ſuch as the pea, bean, kidney-bean, &c. being oblong, more or leſs compreſſed, with two valves, and one, two, or more, *loculi* or cells, containing a few ſeeds, of different ſhapes and magnitudes in different genera, all faſtened along one ſuture, or ſeam, only. See LEGUMEN and PERICARPIUM.

Papilionaceous-flowered plants are very numerous, and conſiſt both of herbaceous plants and trees, as aforeſaid: of the former many are trailing or climbing plants, with long weak ſtalks, and being as it were helpleſs of themſelves, indulgent nature has either provided them with tendrils to climb and faſten themſelves to the neighbouring trees and buſhes, as in all the ſorts of peas; or their ſtalks are endued with a faculty of twining themſelves around the bodies in their neighbourhood for the purpoſe of ſupport. The climbing ſorts of kidney-bean furniſh examples; and as to the tree and ſhrub kinds of this tribe, they obtain in ſtature, from one yard to ſixty or ſeventy feet. Moſt of the ſorts, both of the herbaceous and the ſhrub and tree kinds, are garniſhed with alternate leaves of different forms, being either ſimple, fingered, or winged, but moſt commonly of this laſt form, having the lobes entire, and ſometimes placed in pairs, as in *lathyrus*, but moſt commonly the winged leaf is terminated by an odd lobe; and the winged or pinnated leaves of this order, have generally a daily, or periodical motion, depending upon the progreſs of the ſun in his diurnal courſe. See MOTUS.

The principal plants of this tribe are the following, conſiſting of herbaceous plants and trees.

*Amorpha*, baſtard indigo—*anthyllis*, ladies finger—*ebenus*, ebony of Crete——*erythrina*, coral-tree—*geniſta*, ſingle-ſeeded broom——*lupinus*, lupine—*ononis*, reſt harrow—*ſpartium*, common broom—*ulex*, furz or whins—*æſchynomene*, baſtard ſenſitive-plant——*colutea*, bladder-ſena—*coronilla*, jointed-podded *colutea*—*cytiſus*, laburnum, baſe-trefoil, &c.—*glycine*, Carolina kidney-bean-tree—*glycyrrhiza*, liquorice—*hedyſarum*, French honey-ſuckle—*lathyrus*, everlaſting-pea——*lotus*, bird's-foot trefoil—*medicago*, moon and ſnail trefoil——*orobus*, bitter vetch—*phaſeolus*, kidney-bean—*piſum*, pea—*robinia*, falſe acacia—*ſcorpiurus*, caterpillar-plant—*trifolium*, trefoil—*vicia*, vetch and garden-bean—*aſtragalus*, liquorice-vetch, goat's-thorn—*piſcida*, dog-wood-tree.

Several of the plants of this tribe or family, furniſh food both for men and quadrupeds: the chief eſculent ſorts for the kitchen-garden are pea, bean, and kidney-bean; the ſeed of which are the eatable parts, alſo the young ſeed-pods of all the kidney-bean kinds.

Many of them are alſo uſeful plants for ornamenting gardens; and for many excellent medicinal uſes; alſo many of them are valuable in various trades.

But the particular deſcription of the different genera of this order, together with their uſes and general culture, is fully illuſtrated, each under its proper head.

PAPPUS, Down of flowers, or a ſort of feathery crown, which adheres to many kinds of ſeeds, exemplified in lettuce, dandelion, ſow-thiſtle, groundſel, &c.

Many of the Pappoſe plants produce compound flowers, and their ſeeds are furniſhed with a *Pappus* adhering to the top of each, ſo as to reſemble a ſhuttle-cock, and naturally framed for flying, for the purpoſe of diſſemination or ſpreading about the ſeed, and for being tranſported by the wind to very conſiderable diſtances from its parent; an admirable contrivance of nature to ſow her productions; and thus render common to different ſoils and territories individuals of the ſame ſpecies, which without ſuch precaution might have been confined to one.

The *Pappus* is either ſimple, like hairs, *Pappos piloſus*, as in ſwallow-wort, groundſel, golden-rod, &c. or branched, or compound in a feathered like manner, *Pappus plumoſus*, as in dandelion, hemp-agrimony, ſcorzonera, and valerian: in ſome plants the *Pappus* adheres cloſe to the ſeed, *Pappus ſeſſilis*, as in hawkweed; and in ſome it is elevated upon a pedicle, or ſtipes, *Pappus ſtiptatus*, as in lettuce, dandelion, baſtard-hawkweed; and the foot-ſtalks, or threads upon which it is raiſed, have obtained the name *ſtipes*. See STIPES.

Of this tribe of Pappoſe plants are many of our moſt cumberſome weeds, the ſeeds of which by the means of the *Pappus* are diſſeminated widely about our gardens and fields, particularly groundſel, thiſtle, ſow-thiſtle, and dandelion; therefore the utmoſt care is requiſite to deſtroy all theſe kind of weeds before they perfect ſeeds.

PARASITUS *Planta*, Paraſitic Plants; plants that are produced upon the trunk or branches of other plants, and will not grow in the ground, ſuch as miſſeltoe, and numbers of the moſſes, and fungus tribe.

The manner in which Paraſitic Plants attach themſelves to others is not uniform, ſome, ſuch as the miſſeltoe, moſſes, and funguſſes, are produced originally upon the plant on which they are found growing; the former of which grows upon the branches of large trees, principally from the under ſide of the branches, extending their roots under the bark, and branch out into a large ſpreading head, which generally grows downward, in a hanging poſition; and is nouriſhed wholly at the expence of the tree upon which it grows; but the moſſes are often diſperſed all over the ſurface of the ſtem and branches; and the funguſes grow ſometimes on the upper roots of old trees, and ſometimes upon their trunk or ſtem.

Other Paraſitic Plants ariſe from the ground, and the ſtem attaches itſelf to the firſt plant it encounters, ſtrikes root therein; after which the firſt root dies, and the plant continues to live and nouriſh itſelf upon the plant on which it is fixed.

There are other ſorts of Paraſitical Plants, which rooting firſt in the ground, their ſtems attach themſelves to the bodies of trees in their neighbourhood, planting their roots into the bark, as they aſcend; continuing, however, their ground-root, and draw their principal nouriſhment from the ſoil, exemplified in the *hedera*, or ivy-tree.

PARTERRE, a ſpacious level plot of ground in the pleaſure garden, divided into many little partitions, or compartments, of different figures and dimenſions; by means of edgings or lines of dwarf-box, or by verges of graſs turf, and tracks of ſand, fine gravel, &c.

Theſe Parterre works were in great eſtimation in ancient gardening, and were commonly ſituated directly in the front of the houſe, generally the whole width of the front, and extended proportionably in length; and when the intermixture of the figures are artfully diſpoſed, they ſtrike the eye very agreeably, and afford an ornamental proſpect at all times of the year.

The general figure of a Parterre is an oblong, or long ſquare, about as long again as broad: chuſing generally a level open ſpot on ſome conſpicuous part; and in the diſtribution, there is firſt a long bed or border of earth, carried all round for a boundary; and the internal ſpace within this border, is traced out into various little partitions, or incloſures artfully diſpoſed into different figures correſponding with one another, ſuch as long ſquares, triangles, circles, various ſcroll-works, flouriſhes of embroidery, and many other devices, according to fancy; all of which figures are formed either by lines of dwarf-box, with intervening alleys and tracks of turf, ſand, fine gravel, ſmall ſhells, &c. or are formed ſometimes entirely of verges of fine turf, diſpoſed into wide or narrow compartments, as the figure may require; and ſometimes they conſiſt of box-edgings, and tracks of turf together: the partitions or beds of earth formed by the tracks of box and turf compartments, &c. are planted with ſome choice flowers; but no large plants to hide the figure of the Parterre; for the regularity of this in the artful diſtribution of the different figures, is intended as a decoration to the whole place long after the ſeaſon of the flowers is paſt.

But many prefer a Parterre compoſed entirely of turf and beds of earth, perfectly even, without any other figure than the long ſquare, forming a border of earth all round, within which is compartments of graſs, and beds or borders of earth of different dimenſions.

Sometimes Parterres, by means of box-edgings, are formed into labyrinths or mazes; and ſome are made to repreſent coats of arms with the proper ſupporters. All crowded deſigns, however, and ſuch figures as are too much compound, are to be conſidered as ſo many labyrinths, in which the eye is loſt, and therefore improper to be employed for any general plan.

Indeed Parterres in general are become in diſrepute in England, their regularity being thought too ſtiff and formal, their figures often of a trifling appearance, and their making and keeping in proper order attended with conſiderable trouble and expence, ſo that they are almoſt baniſhed the Engliſh gardens; ſubſtituting in their ſtead ſpacious graſs lawns and rural ſhrubberies.

However, a little Parterre-work for the ſake of variety, might ſtill be admitted, though not immediately in the front of the houſe, as heretofore in ancient gardening. A ſpacious lawn, bounded with a rural ſhrubbery,

bery, is the moſt eligible for that ſituation; but a plain Parterre of a moderate extent, either formed with lines of box, or with turf, might be introduced in ſome of the more internal parts, and diſtributed into plain compartments, or beds of earth for flowers, ſo as to anſwer the purpoſe of a flower-garden for the moſt curious ſorts; it will have an agreeable effect in forming a contraſt to the more rural ſcenes.

PARTING ROOTS, an expeditious mode of propagation, for the increaſe of great numbers of fibrous-rooted perennials in particular.

Great numbers of the herbaceous fibrous and tuberous-rooted perennial tribe often increaſe by the root into large cluſters or bunches, compoſed of numerous ſmall ſlips or off-ſets particularly many of our flowery perennials, illuſtrated in campanula, perennial ſun-flower, golden-rod, perennial aſters, polianthus, and daiſy, with innumerable other ſorts; which from one ſmall ſlip or off-ſet of the root often multiply in a ſeaſon or two into a large cluſter of ſuch off-ſets, and theſe cluſters of roots being parted into ſeveral ſeparate ſlips, with root-fibres at their bottom, and a bud at top, each commences a diſtinct plant; ſo that by thus Parting the Roots you may inſtantly multiply one plant into many, each of which becomes alike in growth and general habit to the original, and will all flower the enſuing ſeaſon in their due courſe; and in their turns detach from their ſides all around, a due ſupply of off-ſets for farther propagation.

The ſorts of plants that are uſually encreaſed by this mode of propagation are always exhibited in their reſpective genera under the head *Propagation*, &c.

The beſt general ſeaſon for Parting Roots is in autumn, after they have done flowering, and their ſtalks decay, which is done in September and October, and the detached off-ſets being planted directly, they will take good root before winter; though in many hardy ſorts, Parting the Roots may be performed almoſt any time, in open weather, from September till March; and ſome of the tender kinds ſucceed beſt in ſpring: obſerving, however, in Parting Roots in the ſpring-ſeaſon, it ſhould be done before they begin to ſhoot forth their ſtalks, &c.

With reſpect to the method of Parting Roots, there is nothing more eaſy: when any plant you deſign to encreaſe, has multiplied by its roots into a cluſter of off-ſets, the whole may either be taken up entirely, and the root parted into as many ſlips as are furniſhed with fibres, &c. or, on particular occaſions, a quantity of ſlips may be detached from the ſides all around as it ſtands in the ground: in either method, the work of Parting or ſlipping the Roots may in many ſorts be effected eaſily with the hand; and in many others the aſſiſtance of a knife, &c. is often neceſſary in ſeparating them properly; obſerving that when you want to make as great an increaſe as poſſible, you may part the root into as many ſlips as may be convenient, provided each is furniſhed with ſome fibre or root-part, and crowned with one or more buds or eyes for forming ſhoots at top; but when the detached off-ſets are wanted for flowering as ſtrong as poſſible the enſuing ſeaſon, they ſhould not be parted very ſmall, but into middling-ſized ſlips, where practicable, which being planted in the proper places will flower in tolerable perfection the following ſeaſon.

The ſlips ſhould generally be planted directly by dibble; the very ſmall ſlips plant in nurſery-beds to ſtand till next autumn, to acquire ſtrength; then may be tranſplanted with balls into the places where they are to remain; and the larger ſlips, may be planted as ſoon as parted, at once where they are to continue.

This method of propagation may, if thought neceſſary, be practiſed to many ſorts annually, as numbers of the herbaceous perennials multiply in one ſeaſon into large bunches, as aforeſaid, ſo as they may be encreaſed at pleaſure in great quantities.

PASSERINA, Sparrow-wort.

The plants of this genus are ſhrubby exotic ever-greens of Africa, &c. for the green-houſe collection, riſing with woody, downy, white, durable ſtalks, from about half a yard to ſix or eight feet hight high; garniſhed with ſmall fleſhy leaves; and ſmall monopetalous, tubular, four-parted flowers.

Claſs and order, *Octandria Monogynia*.

*Characters.*] CALIX, none. COROLLA, is monopetalous, with a ſlender tube, ſwelling below, and divided above into four ſpreading parts. STAMINA, eight briſtly filaments placed on the tube, and nearly oval erect antheræ. PISTILLUM, an oval germen, ſlender ſtyle, and capitated hiſpid ſtigma. PERICARPIUM, is oval, leathery, and unilocular, incloſing one oval, pointed ſeed.

[1]PASSERINA *Filiformis.*

*Filiforme-leaved Paſſerina.*] Hath a ſhrubby ſtem, branching laterally five or ſix feet high, covered with a white meally down; filiforme, or very narrow convex leaves, cloſely imbricated four ways, and at the top of the ſhoots ſmall white flowers.

This is the principal ſort in the Engliſh gardens; it is a pretty ever-green, appearing beautiful at all ſeaſons of the year.

[2]PASSERINA *Hirſuta.*

*Hirſuted, or Hairy Paſſerina.*] Hath a ſhrubby ſtalk, branching diffuſely ſix or ſeven feet high, covered with a ſoft meally down; thick, ſhort, fleſhy, imbricated leaves, ſmooth without, and downy within, and ſmall white flowers.

[3]PASSERINA *Ciliata.*

*Ciliated Paſſerina.*] Hath a ſhrubby ſtalk, branching laterally five or ſix feet high, the branches naked below; but garniſhed at top with ſpear-ſhaped, erect, ciliated leaves, and ſmall white flowers.

[4]PASSERINA *Uniflora.*

*Uniflorous Paſſerina.*] Hath a low ſhrubby ſtalk, branching out low into many ſmooth ſpreading branches, a foot and a half high; very narrow leaves placed oppoſite; and purple flowers ſingly at the termination of the branches.

Theſe exotics flower here in June and July: the flowers are ſmall, and not very conſpicuous, and are rarely ſucceeded by ſeeds in England.

The plants in this country muſt be always kept in pots of good earth, and placed in the green-houſe collection, in order for having ſhelter in winter, managing them like myrtles and others of the hardier green-houſe ſhrubs.

The propagation of all the ſorts is performed by layers and cuttings in ſpring or ſummer, giving frequent waterings, and occaſional ſhade every day to the cuttings till rooted; and by the end of September both layers and cuttings will be fit to pot off ſeparately.

PASSIFLORA, Paſſion-flower.

This genus of plants conſiſts of celebrated ſhrubby and herbaceous floriferous climbers for the pleaſure-garden, green-houſe, and ſtove; riſing moſtly with long, ſlender, cirrhoſe-climbing ſtems, aſcending by tendrils many feet high; ornamented ſome with palmated many-lobed leaves, others are bilobed, trilobed, multilobed, &c. and ſome with entire leaves; and at the axillas large pentapetalous nectariferous, ſpreading flowers, of ſingularly curious ſtructure and beauty.

Claſs and order, *Gynandria Pentandria.*

*Characters.*] CALIX, is five-lobed, plane and coloured. COROLLA, five large half-ſpear-ſhaped, plane, obtuſe petals, the ſize and figure of the calix, and a nectarium within the petals, formed of many fibres or rays, in a ſort of triple coronet round the ſtyle, the exterior ones longeſt, and the upper ones drawing in narrow above. STAMINA, five awl-ſhaped gynandrous filaments, they being attached to a ſort of pillar crowned by the germen, and are placed at its baſe, ſpread out every way, and terminated by oblong incumbent antheræ. PISTILLUM, a roundiſh germen elevated upon an erect pillar or column, and the germen ſupporting three ſpreading ſtyles, crowned each with a capitated ſtigma. PERICARPIUM, an oval, fleſhy, baccaceous, unilocular fruit, placed on a pedicle, and many oval ſeeds.

There are near thirty different ſpecies, but ſcarce one third of that number common to the Engliſh gardens; all of which are natives of foreign warm countries, in different parts of the world; and only one of them is hardy enough to ſucceed well here in the open ground; the others requiring ſhelter of a green-houſe and ſtove, but moſtly of the latter.

*Hardy Kind for the full Ground.*

There is only one hardy ſpecies, a ſhrubby exotic from the the Brazils, which will proſper here in the full ground, planted againſt a warm ſouth wall, where it will produce flowers and fruit annually; the flowers have ſingular beauty, but the fruit is only for variety as it grows, and for its ſeed for propagation.

[1]PASSIFLORA *Cærulæ.*

*Blue-rayed Common Palmated Paſſion-flower.*] Hath long, ſlender, ſhrubby, cirrhoſe-climbing, purpleiſh-green ſtalks, branchy and aſcending upon ſupport by their claſpers thirty or forty-feet high; having at each joint one large palmated leaf, of five long folioles expanding like an open hand, accompanied at the ſame joint by a long twining *cirrhi*, or claſper; and at the axillas large ſpreading flowers, with whitiſh-green petals, and a blue radiated nectarium; ſucceeded by a large, oval, yellowiſh fruit.

It flowers from July until October; the flowers are very large, conſpicuous, and their compoſition is exceedingly curious and beautiful.

The general ſtructure of the ſingular flowers of this plant is, they come out at the axillas on pedunculi about three inches long, which they terminate, each flower having juſt cloſe under the calix a three-lobed involucrum-like appendage; a five-lobed calix, and a five-petalous corolla, the ſize, figure, and colour of the calix, &c. the petals arranging alternately with the calicinal lobes, the whole, including the involucrum, calix, and corolla, make juſt thirteen lobes and petals, all expanded flat; and within the corolla is the nectarium compoſed of a multitude of thread-like fibres, of a blue and purple colour, diſpoſed in circular rays round the column of the fructification, the outer ray is the longeſt, flat and ſpreading on the petals; the inner is ſhort, erect, and narrows towards the centre; in the middle is an erect cylindric club-ſhaped column, or pillar, crowned with the roundiſh germen, having at its baſe five horizontal ſpreading filaments, crowned with incumbent yellow antheræ, that move about every way; and from the ſide of the germen ariſes three ſlender ſpreading ſtyles, terminated by headed ſtigmas; the germen afterwards gradually becomes a large oval fleſhy fruit, ripening to a yellowiſh colour.

Theſe wonderful flowers are only of one days duration, generally opening about eleven or twelve o'clock, and frequently in hot ſunny weather burſt open with elaſticity, and continue fully expanded all that day, and the next they gradually cloſe, aſſuming a decayed-like appearance, and never open any more; the evening puts a period to their exiſtence, but are ſucceeded by new ones daily on the ſame plant.

This plant and flowers are held in great veneration in ſome foreign catholic countries, where the religious make the leaves, tendrils, and different parts of the flower to repreſent the inſtruments of our bleſſed Saviour's paſſion; hence the name *Paſſiflora*.

### *Green-houſe Kinds.*

There are two herbaceous ſpecies, exotics of Virginia and other parts of America, that will proſper here in the open air, ſometimes the year round in a warm ſituation; but are always ſubject to injury from ſevere froſt, therefore it is proper to keep them principally in pots, in order to move to ſhelter of a green-houſe in winter.

Both the ſorts have abiding roots, but the ſtalks generally decay here in winter, and are renewed again in ſpring.

[2]PASSIFLORA *Incarnata.*

*Incarnated, or Fleſh-coloured Italian Paſſion-flower.*] Hath a ſtrong perennial root; ſlender, herbaceous, cirrhoſe-climbing ſtalks, riſing upon ſupport four or five feet high; leaves compoſed of three ſawed lobes, each leaf attended by a twining tendril; and at the axillas long ſlender pedunculi, terminated each by one whitiſh flower, having a greeniſh calix, and a reddiſh, or purple radiated nectarium, ſurrounding the column of the fructification, which ſucceed to a large, round, fleſhy fruit, ripening to a beautiful orange colour.

The flowers of this ſpecies are alſo very beautiful, though of ſhort duration, opening in the morning, and night puts a period to their beauty; but are ſucceeded by a daily ſupply of new ones.

The fruit of this ſort is alſo very ornamental, as ripening to a fine reddiſh orange colour; but theſe rarely attain perfection here, unleſs the plants are placed in the ſtove, therefore when there is ſuch accommodation, it highly merits that indulgence, where it will exhibit both flowers and green and ripe fruit, all at the ſame time in a beautiful manner. Remarking, however, it will flower in the open air freely in ſummer, but not perfect its fruit, ſo as to appear ſo ornamental, as with the indulgence of a ſtove.

[3]PASSIFLORA *Lutea.*

*Yellow Virginian Paſſion-flower.*] Hath a creeping perennial root; weak, ſlender, herbaceous, cirrhoſe-climbing ſtalks, riſing upon ſupport, three or four feet high; heart-ſhaped, three-lobed, ſmooth leaves, having three equal, obtuſe, entire lobes; each leaf attended by a twining claſper; and ſhortiſh pedunculi ſuſtaining ſmall yellowiſh flowers.

Some of both theſe ſpecies ſhould always be retained in pots for removing them under ſhelter of a green-houſe or garden-frame in winter, to have protection from froſt; and ſome may be planted in a dry warm ſituation againſt a ſouth wall, where they will live thro' our moderate winters, but are liable to ſuffer in ſevere froſts, unleſs they are covered.

*Stove.*

*Stove Kinds.*

The *Paſſifloras* of this temperature are exotics of South America and other hot parts of the world, and require the ſhelter of a ſtove here, and of which the following are the principal ſorts in our garden; ſome of them have undivided leaves, others are bilobate, and trilobate, &c.

[4]PASSIFLORA *Serratifolia.*

*Sawed-leaved Surinam Paſſion-flower.*] Hath ſlender, angular ſtalks, climbing by the tendrils ſeveral feet high; undivided, oblong-lanceolate leaves, ſerrated on the edges, accompanied by twining cirrhi; and axillary reddiſh-green flowers.

[5]PASSIFLORA *Laurifolia.*

*Laurus-leaved Paſſion-flower.*] Hath long, tough, rough, branchy, cirrhoſe-climbing ſtalks, riſing by ſupport twenty or thirty feet high; undivided, oval, thick, entire leaves, on biglandulous foot ſtalks; and axillary ſnowy white flowers, ſtriped or ſpotted with red, blue, and yellow, and with violet-coloured rays, a yellow column, purple ſtyles, and indented involucrum.

[6]PASSIFLORA *Veſpertilio.*

*Veſpertilious-leaved, or Bat's-wing Paſſion-flower.*] Hath ſlender, ſtriated, branchy ſtalks; large, bilobate or two-lobed leaves, the baſe roundiſh and glandular, the lobes acute, widely divaricated like a bat's wings, and dotted underneath; and axillary flowers, having white petals and rays.

The leaves of this ſpecies have a ſingular appearance, the two lobes being expanded ſix or ſeven inches wide, reſembling the wings of a bat upon flight; hence the name *Veſpertilio.*

[7]PASSIFLORA *Rubra.*

*Red Paſſion-flower.*] Hath roundiſh or angular ſtalks; bilobate, heart-ſhaped acuminated leaves; and red flowers, ſucceeded by an hexagonal ſcarlet fruit.

[8]PASSIFLORA *Maliformis.*

*Apple-fruited Paſſion flower.*] Hath long, thick, triangular, cirrhoſe-climbing ſtems, riſing by ſupport fifteen or twenty feet high; undivided, large, oblong-heart-ſhaped, entire leaves, on biglandular or two-eared foot-ſtalks; and long axillary peduncules, ſuſtaining large, white-petalous flowers, having reddiſh entire involucrums, and purpeliſh rays, ſucceeded by large maliforme, or apple-ſhaped yellow fruit.

[9]PASSIFLORA *Holoſerea.*

*Silky-leaved Paſſion-flower.*] Hath long, ſlender, downy ſtalks, climbing by ſupport twenty feet high; three-lobed halbert-ſhaped, downy, ſoft, ſilky leaves; having each ſide of the baſe indented and reflexed; and axillary white flowers, with purple and yellow rays.

[10]PASSIFLORA *Multiflora.*

*Multiflorous, Paſſion flower.*] Hath long, ſlender, cirrhoſe-climbing ſtalks, riſing by ſupport twenty feet high; undivided, oblong, entire leaves; and flowers growing in cluſters, having white petals and purple rays; ſucceeded by ſmalliſh, egg-ſhaped, yellow fruit.

[11]PASSIFLORA *Quadrangularis.*

*Quadrangular-ſtalked Paſſion-flower.*] Hath long, four-cornered, membraneous ſtalks, climbing many feet high; undivided, almoſt heart-ſhaped entire leaves, on foot-ſtalks having ſix glands; and large white and purple flowers.

[12]PASSIFLORA *Suberoſa.*

*Cork-barked Paſſion-flower.*] Hath ſlender ſtalks, climbing fifteen or twenty feet high, having a whitiſh, fungus, cracked bark, like the cork-tree; three-lobed, target-ſhaped leaves; and ſmall whitiſh-green flowers.

All theſe ſpecies of *Paſſiflora* flower here in ſummer, beginning commonly in July, and continue in ſucceſſion for two or three months; for although the flowers of all the ſorts are ſcarcely of more than one day's duration, they are ſucceeded by new ones daily, for as the ſhoots advance, freſh flowers ariſe at the joints; in all the ſorts they conſiſt each of a five-lobed calix, and a corolla of five petals, and circular rays in the centre, ſurrounding the column of the fructification (ſee the *Characters*); and many of the ſorts are ſucceeded by fruit in our gardens, which in all the ſorts is of an oval form, ſome of the ſize of large plums and middling apples, and ſome not larger than gooſeberries.

All the twelve ſpecies here enumerated, are of the cirrhoſe-climbing kind, i. e. climbing by means of their twining *cirrhi*, or claſpers, that catch hold of any adjacent ſupport. See CLIMBING PLANTS.

As all the ſpecies are natives of warm countries, in theſe parts they are moſtly of a tender quality, except the firſt ſort, which ſucceeds very well in the full ground, in a warm ſitu-

ſituation; only their young branches are ſometimes killed in very ſevere winters; but plenty of new ones generally riſe again in ſpring following: the ſecond and third ſorts, however, are tender, and muſt, for the moſt part, have ſhelter in winter: all the others, denominated ſtove kinds, muſt always be retained in that repoſitory.

The firſt ſpecies, *Paſſiflora Cærulæ*, being the hardieſt, is conſiderably the moſt common ſort in our gardens; is ſuperior both as a climber, and in the beauty of its flowers: as a climber it demands our particular notice, for it may be trained to the top of the higheſt walls, even if thirty or forty feet high, and will often ſhoot fifteen or twenty feet in one ſeaſon; producing from the joints as they advance, a plentiful ſucceſſion of their extraordinary flowers for three months; therefore this fine climber highly merits a place in every garden; and may be eaſily raiſed from ſeed, layers, and cuttings (ſee its *Propagation*); or may be purchaſed reaſonable at all the nurſeries. The ſeaſon for tranſplanting it is early in autumn, or in February or March.

It ſhould generally be planted againſt ſome high warm wall, in order for training its branches, for they muſt be ſupported, otherwiſe they will trail on the ground, or entangle with one another, ſo that its ſtems and branches muſt be conſtantly nailed up to the wall five or ſix inches aſunder; and according as they ſhoot during ſummer, train in moſt of the ſhoots for flowering, and principally at full length for the preſent, ſuffering them to remain ſo all the winter; and in ſpring the whole may be pruned, cutting out all dead ſhoots that have been killed by the froſt, and where the branches or ſhoots are too much crowded, thin out all the weakeſt and worſt placed; leaving a due ſupply of the ſtrongeſt ſhoots at proper diſtances in every part from bottom to top, and let each of thoſe be ſhortened to about a yard, or four or five feet long, according to their ſtrength, both to confine them within proper compaſs, if neceſſary, and promote their throwing out ſtrong ſhoots for the enſuing ſummer's bloom, for the flowers are produced always upon the ſhoots of the year.

As in ſevere winters their branches, if not protected, are ſometimes killed, it is adviſable at ſuch times, whilſt the plants are young in particular, to grant them ſhelter of mats during the inclement ſeaſon, and protect their roots with dry litter laid over the ground: obſerving, however, to uncover their branches as ſoon as the froſt breaks: this covering, however, is only neceſſary in very ſevere froſts.

The two green-houſe ſorts ſhould generally be potted, to move to ſhelter in winter, either of a green-houſe or garden-frame: ſome plants of each ſort may alſo be planted in the full ground, in a warm border, to take their chance; obſerving to cover the ground over their roots in ſevere weather; obſerving in both methods to place ſtakes in ſummer to train the ſtems and branches upon.

All the ſtove kinds muſt conſtantly be kept in pots, placed always in the ſtove, and for the moſt part plunged in the bark-bed; placing ſtrong ſtakes for the purpoſe of training the branches; managing them as other ſtove-plants of a ſimilar nature. See STOVE-PLANTS.

*Propagation, of all the Sorts.*

The propagation of all theſe ſpecies of *Paſſiflora* is, by ſeed, by layers, and by cuttings; under the following heads, hardy kind, green-houſe kinds, and ſtove kinds.

Hardy Kind.—This ſort, common Paſſion-flower, is raiſed in the three following ways. Firſt, by ſeed: in March ſow the ſeed in large pots, half an inch deep, and either plunge them in a warm border, and as the weather becomes warm move them to the ſhade; or if as ſoon as the ſeed is ſowed, the pots are plunged in a hot-bed, it will forward the germination of the ſeed, and the plants will riſe ſooner; which harden gradually to the open air till october; then place them under a garden-frame for the winter, to have ſhelter from froſts, and in ſpring plant them out in nurſery-rows, and in a year or two they may be tranſplanted where they are to remain, againſt ſome warm ſouth wall. 2. By layers: in ſpring lay down ſome of the branches in the common way, they will readily emit roots, and make proper plants by autumn; when, or rather in ſpring following, tranſplant them either in nurſery rows, or where they are to remain. 3. By cuttings: in February or March cut off a quantity of ſtrong young ſhoots, in length of from about eight to ten or twelve inches, plant them in any bed or border of common earth, giving frequent watering in dry weather, and when ſunny and hot, a moderate ſhade of mats will be of much advantage, and they will emit roots at bottom, and ſhoots at top, and become good plants by autumn, allow-

allowing them occaſional ſhelter of mats, &c. during the winter's froſt, and in ſpring plant them out.

If a quantity of theſe cuttings are planted cloſe, and covered down with hand-glaſſes, it will forward their rooting; obſerving, however, when they begin to ſhoot at top, to remove the glaſſes.

Green-houſe Kinds.—Both the ſorts, by ſeeds, layers, and parting the roots. 1. By ſeed. This is commonly obtained from America; ſow it in pots in March, and plunge them in a hot-bed to raiſe the plants, which inure to the open air in ſummer, and give them ſhelter of a green-houſe or frame in winter, and in ſpring plant ſome out in pots, and place them among the green-houſe and other plants in the full ground, under a warm fence to take their chance. 2. By layers. In ſpring lay ſome young ſhoots; they will readily grow and become good plants for potting off in autumn. 3. By parting the roots. In ſpring, before they begin to ſhoot, is the proper time; the ſecond ſort in particular multiplies exceedingly by its creeping roots; which divide into ſlips, and plant them in a bed of rich earth till autumn, when ſome ſhould be tranſplanted into pots for occaſional ſhelter in winter.

Stove Kinds.——All theſe ſorts by ſeed, layers, and cuttings.

By Seed.—This is procured chiefly from abroad; ſow it in ſpring in pots, plunge them in a hot-bed, or in a ſtove bark-bed; the plants will ſoon appear, which, when three inches high, prick out in ſeparate ſmall pots, give water and plunge them again in the hot-bed, giving occaſional ſhade till rooted; as they advance in growth ſhift them into larger pots, and retain them conſtantly in the ſtove.

By Layers.——In ſpring, or beginning of ſummer, lay the young branches, they will readily grow, and be fit to pot off ſeparately in autumn.

By Cuttings.—In ſpring or ſummer plant ſome cuttings of the young ſhoots in pots, plunge them in the bark-bed, give water frequently; moſt of them will take root, and be fit to pot off ſingly in autumn.

PASTINACA, Parſnep.

The principal of this genus is that well known herbaceous eſculent, *Garden Parſnep*, a biennial of high eſtimation for its large eatable root, valuable for winter and ſpring ſervice, crowned with large pinnated leaves, and umbelliferous flowers.

Claſs and order, *Pentandria Digynia.*

*Characters.*] CALIX, multiple umbelliferous flowers, deſtitute of an involucrum, and with ſcarcely viſible cups to the florets. COROLLA, a uniform umbel of many ſmall florets, compoſed each of five ſpear-ſhaped involute petals. STAMINA, five hair-like filaments, and roundiſh antheræ. PISTILLUM, a ſmall germen under each floret, two reflexed ſtyles, and obtuſe ſtigmas. PERICARPIUM, none, a plane compreſſed eliptical, two-parted fruit, having two eliptic ſeeds, ſurrounded with a border.

There are only two ſpecies of this genus, the principal of which for our purpoſe is the common parſnep, viz.

PASTINACA *Sativa.*

*Cultivated, or Garden Parſnep.*] Hath a large, long, fleſhy root, penetrating perpendicularly into the ground, half a yard or two feet in length, three or four inches or more thick at top, tapering gradually to the lower end; crowned with very large ſingly-pinnated leaves; and when it ſhoots for ſeed, riſes with an upright, ſtrong, channelled, hairy ſtalk, branching four or five feet high, having all the branches terminated by large yellow umbels of flowers.

*Variety.*] Wild Parſnep with hairy leaves.

They are biennial plants, that being raiſed from ſeed in ſpring, ſhoot up only leaves the firſt ſummer, and the roots attain perfection for uſe the ſucceeding autumn and winter; and in the ſpring after they ſhoot up into ſtalk for flower and ſeed, and having ripened ſeed, totally periſh; ſo that a freſh ſupply muſt be raiſed annually.

The Garden Parſnep is an exceeding fine eſculent root, though by reaſon of its peculiar ſweet reliſh, it is not in general eſtimation; it, however, is a very wholeſome and nouriſhing root, to many very palatable, and is very profitable for family ſervice, and goes off well in the markets.

The principal ſeaſon of parſneps is from October or November until March; for they are ſeldom good till they have attained their full growth, determinable by their leaves beginning to turn yellow and decay in autumn; and they will continue in great perfection until March or April, that they begin to ſhoot up into ſtalk for ſeed, when they become hard, ſticky, and unfit for eating.

In

*Its Propagation and Culture.*

The propagation of this eſculent root is by ſeed annually in the open quarters of the kitchen garden. February and March is the proper ſeaſon for ſowing. Obſerving to procure freſh ſeed, for if more than one year old, it will not grow.

I ſhould adviſe the main crop of Parſneps to be ſowed alone, and not mixed with other crops, ſuch as onions, leeks, or carrots, as often practiſed, for there is nothing gained by this, it rather cauſes confuſion, and more trouble in the culture; but by ſowing them ſeparate, their culture can be more regularly attended to, and the crop will attain greater perfection.

Chuſe for this crop a ſpot of light, rich, deep ſoil, in one of the moſt open airy quarters, which ſhould be trenched one full ſpade deep at leaſt, or if two the better, provided the depth of good ſtaple admit, that the roots may have a due depth of looſe ſoil to run down to their full length: obſerving, that if the ground is previouſly trenched up in rough ridges in winter, eſpecially if any ways ſtiff or wet, and let it lie expoſed ſome time to the ſun and air, it will improve its temperament greatly for this purpoſe; then at ſowing time level it down, in dry weather, for the reception of the ſeed, breaking all large clods, and leave an even ſurface, but not rake it till after the ſeed is ſowed, which ſhould generally be performed whilſt the ground is freſh ſtirred, or at leaſt before the ſurface becomes too dry, ſo as in raking the clods will readily fall under the rake to bury the ſeed regularly.

Sow the ſeed by broad-caſt thinly, either all over the ſurface, or the ground may be divided into four-feet wide beds, as ſhall be convenient, though for large quantities the former is the moſt eligible practice; as ſoon as the ſowing is done, tread down the ſeeds evenly, and finiſh with an even raking, to cover all the ſeeds equally, and to ſmooth the ſurface: in about three weeks, or a little more or leſs time, the ſeeds will germinate, and the plants will appear above ground, when they ſhould be thinned and weeded as directed below.

When the plants are two or three inches high, proceed to thin them to regular diſtances, and clean them from weeds; which works ſhould generally be performed by a three or four-inch hoe; chuſe dry weather, and cut out the plants to about ten or twelve inches diſtance, for they ſhould have large room, cutting up all weeds as you proceed; after this no more culture will be required till the future progreſs of the weeds render another hoeing neceſſary; and probably another repetition may alſo be required, till the plants are in full leaf, when they will cover the ground, and bid defiance to any farther interruption from weeds, and will not require any farther attention till autumn, when the roots will become fit for uſe.

In October the roots will be arrived nearly at full growth; when the leaves begin to turn yellow and decay, is a certain ſign of maturity, and may then begin to dig up ſome of them for uſe, according as they are wanted.

Theſe roots may either remain in the ground all winter, and be taken up according as they are wanted; or may be dug up in November, and their tops pared off cloſe, then buried all winter in ſand, in ſome ſhed or other dry place, to be ready at all times for uſe, as directed for carrots, which may be practicable enough for ſmall quantities: you may leave ſome, however, in the ground for ſpring ſervice, till January or the beginning of February, juſt before they begin to ſhoot, then dig them up and lay them in ſand; and by taking them up at this time, it will retard their effort for ſhooting, ſo as they will continue in tolerable perfection until the latter end of April.

Parſneps when raiſed for ſale generally make a tolerably profitable crop, particularly about London, where they are always ready ſale, from November ill April. In preparing them for market, they pare off the top quite cloſe, and trim the lower end, and waſh them clean; then bunch them up with oſier rods, in flat bunches, ſix or more roots in each, according to their ſize: thus prepared they are ſold in market to the retailers at from two or three to four or five ſhillings per dozen of bunches.

*Saving Seeds of this Plant.*

To have parſneps always in due perfection, great care is neceſſary to ſave ſeed only from ſome of the fineſt roots.

Therefore in autumn or November ſelect a quantity of the large, long, ſtraight roots, trim off their leaves, and plant them in rows three feet aſunder, two diſtant in the lines, and about an inch deep over their top;

thus they will ſhoot up ſtrong in ſpring for flowering, and will ripen ſeed in the latter end of Auguſt, or early in September; when in dry days cut off the umbels of ſeed, and ſpread them upon mats to dry and harden, then thraſh out the ſeeds, and put them up in bags for ſowing next ſpring.

PEDICELLUS, Pedicle, a partial flower-ſtalk, or proper ſtalk of any ſingle flower of an aggregate or cluſter of flowers; the main flower-ſtalk which proceeds immediately from the plant, and ſupports one, two or many flowers, is termed the *Pedunculus*, or common foot-ſtalk of the flowers; and all the leſſer ſtalks detached from the ſides or any part of this, are by Linnæus ſtyled *Pedicellus*. See PEDUNCULUS.

PEDUNCULUS, Peduncle, the main foot-ſtalk of a flower, or head of flowers, bearing the fructification only, and not the leaves.

The Peduncle is often divided or branched into others, and each of the diviſions is termed a *Pedicellus*, or little flower-ſtalk; ſo that the principal foot-ſtalk of any head or cluſter of flowers, is ſtyled the common flower-ſtalk or *Pedunculi*; each of the leſſer foot-ſtalks iſſuing from it is the partial ſtalk, or pedicle, of any ſingle flower in the aggregate, head, or cluſter of flowers, ſupported by the main foot-ſtalk, or Peduncle; thus the *Pedicellus* is always diſtinguiſhable from the main flower-ſtalk, or *Pedunculus*. See PEDICELLUS.

The Pedunculi, or main flower-ſtalks, are alſo diſtinguiſhed by different epithets, according to the place of the plant from which they proceed, as the root, ſtem, branch, axillas, termination, &c. viz.

*Pedunculus radicalis*, radical, or root flower-ſtalk, riſing immediately from the root.

*Pedunculus caulinus*, cauline, or ſtem-flower-ſtalk; when it proceeds from the ſtem.

*Pedunculus rameus*, ramous, or branch-flower-ſtalk; when it proceeds from the branches.

*Pedunculus axillaris*, axillary, or boſom-flower-ſtalk; when it proceeds from the axilla, i. e. comes out at the angles between the leaf and ſtem, or branch, or between the branch and ſtem. See AXILLA.

*Pedunculus terminalis*, terminal-flower-ſtalk; when it proceeds from the termination or end of the ſtem or branch.

*Pedunculus ſolitaris*, ſolitary Peduncle; when it grows ſingly, or only one in the ſame place. Remarking that a ſolitary Peduncule may ſupport many flowers; but a ſolitary flower implies a ſingle or ſolitary flower-ſtalk.

*Pedunculi ſparſis*, ſparſid, or ſcattered-flower-ſtalks; when they grow many together, ſcattered without any order.

Laſtly, the Peduncule bears other different epithets, both from the number of flowers on each, and from the different modes in which the flowers are borne and connected on the Peduncule, &c.

To expreſs the number of flowers on each Peduncule, they are called *uniflorous* when they bear but one flower; *biflorus* when two flowers; *triflorus*, when three flowers; and *multiflorous* when many flowers.

And to expreſs the different principal modes of bearing the flowers, they are termed either *capitulum*, i. e. little head, or compact round cluſter; *ſpica*, the ſpike; *corymbus*, a corymbous; *umbellata*, an umbel; *panicula*, the panicle; *thyrſus*, the thyrſe; *racemus*, a cluſter; *verticillus*, the verticilli, or whorled-ſpiked. See each under its reſpective head.

To the above modes of flowering may alſo be added: *aggregatus*, the aggregate; *amentaceus*, the amentum; and *ſpadiceus*, the ſpadix. See AGGREGATUS, AMENTACEUS, and SPADICEUS.

PENDULUS *Flos*, Pendulous flowers; ſuch as hang downward in a looſe dangling manner.

PENTANDRIA, the name of the fifth claſs; conſiſting of plants with hermaphrodite flowers, having five ſtamina, and compriſes ſix orders derived from the number of ſtyles. See CLASSIS.

PENTAPETALI, Pentapetalous, or five petals; flowers that have five petals. See COROLLA.

PERENNIS *Plantaris*, Perennial, or everlaſting plants; plants that are perpetuated by the roots, that is, whether their leaves and ſtalks decay annually in winter, or always remain, provided the roots are of ſeveral years duration, they are ſtill Perennial plants.

All plants, therefore, with abiding roots, both of the herbaceous tribe in general, and of the ſhrub and tree kinds are Perennials; though in the general acceptation of the word Perennial, it is moſt commonly applied to herbaceous vegetables with durable roots, more eſpecially thoſe of the flowery kind, which among gardeners are commonly called ſimply Perennials, particularly the fibrous-rooted tribe; but it is equally applicable to fibrous, tube-

tuberous, and bulbous-rooted plants, whoſe roots are of ſeveral years duration: likewiſe all ſhrubs and trees of every denomination, as having abiding roots, are alſo Perennial plants.

Perennial plants conſiſt both of deciduous and ever-green kinds; thoſe that caſt their leaves, &c. in winter are termed deciduous Perennials, and thoſe which retain their leaves ever-greens.

Of the herbaceous Perennials, however, both of the fibrous-rooted tribe, tuberous and bulbous-rooted kinds, far the greater part have annual ſtalks, riſing in ſpring and decay in winter; and a great many loſe their leaves entirely alſo in that ſeaſon, ſuch as the Perennial ſun-flower, aſters, and numerous other ſorts; and many ſorts retain their leaves all the year, but not their ſtalks, exemplified in the auricula, polyanthus, ſome *campanulas*, pinks, carnations, and many others.

Great numbers of the herbaceous Perennials multiply exceedingly by off-ſets of the root, by which they are propagated in great abundance. See OFF-SETS and PARTING ROOTS.

All the tree and ſhrub Perennials are durable both in root, ſtem, and branch; but all renew their leaves annually, even the ever-green kinds, although they are in leaf the year round, yet they put forth new leaves every year, to which the old ones gradually give place.

PERIANTHIUM, flower-cup, or the moſt common ſpecies of calix, placed immediately under the corolla, containing it as in a cup. See CALIX.

Many flowers, however, are deſtitute of a *Perianthium*, or flower-cup, ſuch as moſt of the liliaceous plants, as the lily, tulip, crown-imperial, &c.

But far the greater number of plants are furniſhed with a proper flower-cup, and is of different ſtructures in different genera: for ſome explanation, ſee CALIX.

PERICARPIUM, the ſeed-veſſel of plants, analogous to the fecundating ovary in animals; and is formed of the germen, or ſeed-bud in the centre of the flower; which when fertilized by the male-duſt of the antheræ, it then, and not before, becomes a *Pericarpium*, pregnant with ſeed, and gradually ſwells to maturity, and the ſeed ripens accordingly. See GERMEN and SEMEN.

All plants, however, are not furniſhed with a *Pericarpium*; in default of which, either the recepatcle or calix performs that function, by incloſing the ſeeds and accompanying them to maturity.

A *Pericarpium* compriſes different ſpecies or ſorts of ſeed-veſſels, as follows:

CAPSULA, capſule; a dry hollow ſeed-veſſel, that naturally cleaves or ſeparates in ſome determinate manner in one, two, three, or more valves, or openings, for diſperſing the ſeeds; ſo have often from one or two to many valves, as well as loculi, or ſeed cells, as hereafter hinted. See alſo CAPSULA.

LEGUMEN, a legum or pod; a ſeed-veſſel that has two valves or openings, incloſing a number of ſeeds faſtened along one future or ſeam only, ſuch as the pea, bean, &c. See LEGUMEN.

SILIQUA, a ſeed-pod, with two valves, having the ſeeds attached alternately to both ſutures, or joining of the valves, as in cabbage, turnep, wall-flower, ſtock-gilliflower, &c. See SILIQUA.

FOLLICULUS; having only one valve, opening from bottom to top, and having the ſeeds attached to a receptacle within.

DRUPA, a ſtone fruit, of a fleſhy or pulpy nature, without any valve or external opening, and contains a ſtone or nut; the cherry, plum, peach, and moſt other ſtone fruit, are all Drupaceous ſeed-veſſels.

BACCA, a berry; a pulpy fruit without a valve, incloſing a number of ſeeds; as in the currant, gooſeberry, ſtrawberry, &c. See BACCA.

POMUM, apple; a fleſhy fruit of the apple-kind, without any valve or external opening; having in the middle a membranous capſule of ſeveral cells, containing the ſeeds. See POMUM.

STROBILUS, a ſcaly fruit of the cone-kind; being compoſed of a number of woody ſcales, exemplified in the cones of the *Pinus*, fir-tree, &c. See CONUS, and STROBILUS.

Each of the above ſpecies of *Pericarpium*, although of a peculiar ſtructure, yet the ſame ſort is often of different figures and magnitudes in different genera, as is expreſſed in their reſpective *Characters*; as oblong, oval, roundiſh, conical, and various other ſhapes; and ſome *Pericarpiums* having from one or two to many valves or openings, particularly the capſule-kind, which, when of one valve, is termed an *univalvular*, or one-valved *Pericarpium*; of two valves, *bivalvular*; of three, *trivalvular*; of four, *quadrivalvular*; of five, *quin-*

*quevalvular*; of many valves, *multivalvular*. Likewiſe different *Pericarpiums* have from one or two to many *loculi*, cells or lodgments of the ſeeds; ſo that when of one *loculi* or cell, it is termed an *unilocular Pericarpium*; of two cells, *bilocular*; of three, *trilocular*; of four, *quadrilocular*; of five, *quinquelocular*; and of many cells, *multilocular*, &c. all of which is fully exhibited as they occur in diſcriminating the *Characters* of their reſpective genera, for the *Pericarpium* is always employed as an eſſential diſtinction in each genus; and is likewiſe often uſed as a deſcriptive mark in diſtinguiſhing the ſpecies in many genera.

With reſpect to the ſeeds, relative to their number, figure, ſize, &c. in the *Pericarpium*, it is very different in different genera; as in point of number, they are from one to many hundreds; and their figure and ſize are alſo exceedingly various, as is expreſſed in the *Characters* of each genera, &c. See alſo SEMEN.

PERIPLOCA, Climbing Dog's-bane, or Virginian Silk.

It conſiſts of ligneous, volibilate-climbing exotics for the ſhrubbery, green-houſe, and ſtove, riſing with twining ſtalks about any ſupport many feet high; garniſhed with oval-oblong and heart-ſhaped entire leaves, and monopetalous wheel-ſhaped, five-parted flowers in cluſters.

Claſs and order, *Pentandria Digynia*.

*Characters.*] CALIX, is five-parted and permanent. COROLLA, is a monopetalous, rotated, plane, and divided into five narrow ſegments, and with a very ſmall nectarium ſurrounding the centre of the corolla. STAMINA, five ſhort incurved filaments, and erect antheræ. PISTILLUM, a bifid germen, two cylindric ſtyles, and headed ſtigmas. PERICARPIUM, two large, oblong, ventricoſe, unilocular follicules, filled with numerous imbricated ſeeds crowned with down.

There are but three or four ſpecies, all exotics from diſtant countries, of which one is hardy for the ſhrubbery, one for the green-houſe, and the other for the ſtove.

[1]PERIPLOCA *Græca*.

*Grecian Periploca, or Common Climbing Dog's-bane.*] Hath ſhrubby, long, volibilate-climbing, branchy ſtalks, winding round any ſupport thirty or forty feet high; large, oblong-ſpear-ſhape leaves, oppoſite by pairs, of a ſhining-green above, and whitiſh underneath; and at the axillas towards the ends of the ſhoots ſmall cluſters of purple flowers, hairy within.

[2]PERIPLOCA *Africana*.

*African Hairy-ſtalked Periploca.*] Hath ligneous twining, hairy ſtalks, riſing upon ſupport near three feet high; oval hairy leaves, by oppoſite pairs; and from the ſides of the branches ſmall cluſters of purpleiſh flowers.

*Varieties.*] Smooth-ſtalked African *Periploca*—ſinuated-leaved.

[3]PERIPLOCA *Indica*.

*Indian Periploca.*] Hath ſhrubby, ſlender, volibilate-climbing ſtalks, riſing by ſupport ſeveral feet high; oval-ſpear-ſhaped, ſmooth leaves; and flowers in imbricated ſpikes of different colours in the varieties.

Theſe three plants flower principally in July and Auguſt, generally in ſmall bunches; each ſeparate flower is of one plane petal, cut into five ſegments; but are rarely ſucceeded by ſeeds in England.

Theſe plants are retained in many of our gardens, to add to the variety of climbers.

The firſt ſort in particular is a fine volibilate-climbing plant for the ſhrubbery. It will readily wind its ſtalks and branches round any adjacent tree, hedge, pole, or any thing it encounters in its progreſs, and riſe to a prodigious height; and in default of any neighbouring ſupport it will twine and entangle its branches round one another in a complicated manner; but it ſhould generally be allowed ſupport, and it will ſhew itſelf to much greater advantage.

The ſecond and third ſpecies ſhould always be kept in pots, placing the former among the green-houſe exotics to have ſhelter in winter; and the latter placed always in the ſtove.

The propagation of all the ſorts is eaſily effected by layers, which if layed in the ſpring, or early in ſummer, they will be rooted ſufficiently by autumn, and may then be tranſplanted; the hardy kind into the nurſery, the others in pots.

Cuttings of the firſt ſort will alſo often ſucceed; likewiſe of the other two, by aid of a hot-bed.

They may alſo all be raiſed from ſeed procured from abroad; which ſhould be ſowed in ſpring in pots, and plunged in a hot-bed, eſpecially of the ſecond and third ſorts.

PETALUM, Petal, the fine coloured leaves of the flower, which form the *Corolla*. See COROLLA.

PETIOLUS, the foot-ſtalk of the leaves only, very different from the *Pedunculus*, the foot-ſtalk of the flowers; for it is in very few inſtances that either the ſame *Petiolus*, or *Pedunculus*, ſupport both leaves and flowers; Linnæus, therefore, has very properly marked their diſtinction by aſſigning each a different name.

The *Petiolus*, or foot-ſtalk of the leaves, is very commonly furniſhed with two diſtinct ſurfaces, a front and a back; the former flat, the latter round.

Some leaves, however, have no foot-ſtalks at all, but are cloſe-ſitting, or *ſeſſile*. See FOLIUM.

PHASEOLUS, Kidney-bean.

This noted genus conſiſts principally of herbaceous annuals; one ſpecies of which, *common Kidney-bean*, is the chief, and is a moſt valuable legumenous vegetable, compriſing many excellent varieties, both dwarf-growers and high-climbers; garniſhed univerſally with trifoliate leaves, and papilionaceous hermaphrodite flowers, ſucceeded by long legumenous ſeed-pods, which, whilſt young and tender are fine culinary eſculents, and the principal eatable part of the plant; alſo ſometimes the ripe ſeed or beans contained in them.

Claſs and Order, *Diadelphia Decandria*.

*Characters.*] CALIX, is monophyllous, and two-lipped, the upper one emarginated, and the under tridented. COROLLA, is papilionaceous, with a heart-ſhaped vexillum, reflexed on the ſides, oval wings as long as the vexillum, and a narrow keel, twiſted contrary to the ſun's motion. STAMINA, ten diadelphous filaments, and ſingle antheræ. PISTILLUM, an oblong, compreſſed, hairy germen; a filiforme, inflexed, ſpiral, downy ſtyle, and obtuſe hairy ſtigma. PERICARPIUM, a long, thick, coriaceous, pointed pod, containing kidney-ſhaped compreſſed ſeeds.

There is only one ſpecies of Kidney-bean proper for general culture, but it is very profuſe in varieties, and is the parent ſpecies of all thoſe noted kinds, known in our gardens, both dwarf-growers and climbers.

The ſpecies is:

PHASEOLUS *Vulgaris*.

*Common Kidney-bean.*] Conſiſting of the following principal varieties in two claſſes—dwarf-growers—and high-climbers, or runners.

*Dwarf Kinds.*

*Dwarf Kinds, their general deſcription is:*—The plants riſe each with an upright ſhort ſtem, branching out low into a buſhy head, from about ten or twelve inches to a foot and a half high, rarely ſending out runners; garniſhed with trifoliate leaves, and cluſters of white or purple flowers, in different varieties, ſucceeded by long, narrow, hanging ſeed-pods.

*Principal Varieties are:*] Small, early, white dwarf Kidney-bean——ſmall early yellow——early liver-coloured dwarf——early black or negro dwarf——larger white, or cream coloured dwarf——larger black and white ſpeckled dwarf, a good bearer—black-ſtreaked dwarf—ſpeckled amber dwarf—ſparrow-egg dwarf——Canterbury white dwarf, a great bearer—Batterſea white dwarf, alſo a very great bearer. All of which kinds are of upright dwarf buſhy growth, rarely exceeding fifteen or eighteen inches height; and ſeldom throw out runners, except the two latter ſorts, which ſometimes emit a few ſtragglers, but they ſeldom ramble far.

Obſerve that with reſpect to the above-mentioned colours of the varieties, it alludes to that of the beans or ſeed, which alſo often vary to ſeveral other intermediate colours and variegations.

Of the above varieties of dwarf Kidney-beans, the firſt three or four ſorts are at preſent in eſteem for their coming earlieſt into bearing; they being of ſmaller growth than the other ſorts, and ſooner form themſelves for bloſſom and bearing, ſo are proper to plant for the earlieſt crops, and for forcing in hot-beds, &c. As they, however, do not continue long in bearing, they are not ſo proper for the main crops, as the other larger dwarf ſorts; particularly the black and white ſpeckled, the Canterbury and Batterſea kinds, which are all excellent bearers; but the two latter moſt of all, and the pods are ſmaller, more numerous, and eſteemed the ſweeteſt eating of all the dwarf kinds whilſt young, though the pods of the large white dwarf, and the ſpeckled kind in particular, continue tolerably good, even when of a pretty large ſize; but in the Batterſea and Canterbury ſorts they are ſoon apt to become tough and ſtringy: theſe two ſorts, however, are in moſt eſteem for general culture by the market-gardeners in the neighbourhood of London, for the main crops, as being by them conſidered both

as the moſt profitable in bearing, and being a ſmaller pod, the moſt ſaleable in the markets.

As all theſe dwarf Kidney-beans are of upright growth, without emitting any very rambling runners, they do not require ſupport, like the climbing kinds; ſo may be cultivated in drills not more than two or three feet aſunder. See their *Propagation and Culture.*

*Climbing Kinds, or Runners.*

*Climbing Kinds, their general deſcription is:*—The plants riſe with a ſhort ſtalk; emitting ſeveral long, ſlender, twining runners, winding round any ſupport, many feet high; garniſhed with large trifoliate leaves; and at all the joints, as the runners advance, large cluſters of ſcarlet or white flowers in different varieties.

Of the climbing ſort are the following principal varieties.

*Large ſcarlet climber*,——Riſes with many twining runners upon ſupport, twelve or fifteen feet high, having numerous large cluſters of ſcarlet flowers; ſucceeded by large, thick, rough ſeed-pods, containing large, thick, purpleiſh beans.

*Variety of this.*] Large white climber, having large cluſters of white flowers, large, thick, rough ſeed-pods, and white ſeed.

Both theſe ſorts are alike in every reſpect of growth, and only differ in colour of their flowers and ſeed, as above; which is pretty permanent: they are both extraordinary great bearers; and the plants of the ſame crop continue in bearing from July or Auguſt until October; and the pods of both ſorts, even when large, boil exceedingly green, and are remarkably tender and well flavoured.

*Large Dutch Climber*,—Riſes with twining runners, upon ſupport, ten or twelve feet high; numerous cluſters of white flowers; ſucceeded by long, flat, ſmooth pods, containing large, oblong, flat, white ſeed.

This variety is alſo a very great bearer, but it does not continue ſo long in bearing as the two former climbers; and the pods, though very good eating, are rather inferior to thoſe of the ſcarlet kind, and its variety; it is nevertheleſs a very good family bean.

The following climbers are of more moderate growth.

Negro runners—Batterſea white runners—Canterbury runners—variable runners. All of which, though climbers, do not ramble far, and bear plentifully, but not continue ſo long as the above-mentioned climbers; the pods are ſmaller, but are excellent eating while young.

Thus far concludes all the principal varieties of the PHASEOLUS *Vulgaris*, or common Kidney-bean, that have merit for general culture.

In the different varieties, both of the dwarfs and climbers, the ſhape and ſize of the ſeed-pods, and ſeed vary a little, that is, the pods are generally long and narrow, i. e. from about three or four to ſix or ſeven inches long, and from about a quarter of an inch to an inch broad, and moſtly compreſſed, but in ſome are more flattened, and thinner than others, and ſome incline a little to a cylindric form, and of thicker ſubſtance; thoſe of ſome of the climbers are much larger than the dwarf; obſerving in general that as the young green ſeed-pod are, in this country, the principal edible part of the plant, thoſe of the thickeſt fleſhy texture that break criſp and tender, are generally preferable. And as to the ſeed, it is moſt commonly Kidney-ſhaped, though ſome incline a little to an oval form, and ſome roundiſh: in ſome varieties it is very ſmall, ſome middling, and ſome large; and according to the ſize of the ſeed, the plants of the reſpective varieties are generally ſmaller or larger in proportion. The ripe ſeed in ſome countries is alſo preſerved for eating in winter; but the moſt eſtimable part for uſe in England, is the young pods, as aforeſaid, whilſt they are green and tender, before the ſeed in them acquires any conſiderable ſize; they are thus boiled and eaten as ſauce to fleſh-meat. The quite young pods are alſo in great eſtimation for pickling, and make a very delicate pickle for uſe all the year: the young pods are alſo often ſalted down in barrels, or earthen veſſels, for winter uſe, in which they will keep exceedingly fine ſeveral months. The ripe ſeed alſo, as above hinted, of the white kinds, is ſometimes boiled for eating, particularly in France and ſome other parts on the continent, where they are conſtantly preſerved for winter uſe, as we do dried peas; which they ſtew and make very palatable with butter, gravy, and other ſauces.

All the varieties of this ſpecies, both dwarfs and climbers, are originally exotic annuals from the hot parts of the world; and in this country are rather of a delicate temperature,

ture, impatient of cold, and not able to bear the open air here only in ſummer; they being raiſed from ſeed in April, May, and June; and the firſt autumnal cold, in October or beginning of November, puts a period to their exiſtence.

*General Obſervations on their Culture.*

As Kidney-beans are univerſally of the annual tribe, a freſh ſupply muſt be raiſed every year from ſeed; and as the plants of the dwarf kinds rarely continue in bearing longer than three weeks, ſeveral different plantings or ſowings is neceſſary from April until July; but ſome of the climbing ſorts will continue bearing two or three months. Obſerving of all the ſorts, that, as being exotics of a tender nature, they will not ſucceed here in the full ground till April or May: the former of which is the earlieſt time for putting in the firſt crop, which will come into bloſſom in June, and by the latter end of that month will be ſucceeded by young pods fit to gather for uſe; and by different ſowings may continue a ſucceſſion of crops, bearing from June until October; but by aid of hot-beds may have the dwarf ſorts very early in the year; and with the accommodation of a hot-houſe, you may have them at almoſt any time in winter or ſpring, in very great perfection.

The dwarf ſorts are proper for the early and general ſummer crops; and for the ſupply of markets in particular, where large quantities are required, they are the only proper ſorts for general culture, both becauſe they require much leſs room to grow, and leſs trouble in their culture than the climbers, as not requiring to be ſticked; and the produce is generally more ſaleable, though not better for eating, only are to many perſons more agreeable to the eye. To have a conſtant ſupply of theſe ſorts in the natural ground from the earlieſt to the lateſt period, three or four different ſowings, at leaſt, are neceſſary from the beginning or middle of April until the latter end of July; and to have them as early as poſſible, ſome ſhould be ſowed in hot-beds in February and March; or in a hot-houſe they may be planted in the beginning or middle of winter, even to have beans at Chriſtmas, and continued, in ſucceſſion till thoſe in the common hot beds, or in the natural ground come into bearing.

The climbing kinds are, for the moſt part, wonderful great bearers, particularly the ſcarlet ſort, and its white variety, which in the ſame crop often continue bearing plentifully from July until killed by the froſt or cold in October; but all the climbers continue in bearing much longer than the dwarfs, for as their runners continue branching and ſhooting in length two or three months, they, according as they advance, continue ſending forth large cluſters of bloſſoms, ſucceeded by a proportional quantity of fruit: none of the climbers, however, are adapted for early crops; but ſucceed remarkably for the main crop, to ſupply the table from about the middle or latter end of July until October, eſpecially in private gardens, where only moderate quantities are required, and have convenience of ſticks to place for their runners to climb upon, for without ſuch aſſiſtance they would trail on the ground, and entangle with one another in a confuſed manner, and be liable to rot, without affording a quarter of a crop: they ſhould therefore all have ſticks for ſupport, and they will bear amazing great crops. But in the public kitchen-grounds, where conſiderable quantities of Kidney-beans are requiſite for the ſupply of market, the climbers are not ſo proper for any general crop, on account of the great trouble they would require in ſticking: beſides, as before obſerved, they are not ſo ſaleable as the dwarf ſorts, though they are equally good, if not ſuperior to ſome of thoſe kinds, for the table; the ſcarlet kind in particular claims preference. Obſerving, as all the climbing kind run up, by ſupport, very tall, and branch out into lateral runners all the way, they require large ſcope to grow, ſo ſhould generally be planted in drills four feet at leaſt aſunder.

The ſcarlet runner is alſo often employed as a flowery plant for the ſingularity of its flowers; ſometimes, likewiſe, its white variety, planting them in patches alternately in any of the compartments; alſo to run over arbours, or up the ſides of houſes, or to form ſhady walks, &c. See their *Culture*.

The general ſeaſon in which the main crops of all the ſorts of Kidney-beans arrive to perfection in the full ground, is July, Auguſt, and September; or by early and late planting may have them from June till October: obſerving that a conſtant ſucceſſion during theſe months is obtained by three or four different plantings, from the middle of April until July, as before hinted; which repetitions of plantings is abſolutely neceſſary for the dwarf kinds, which do not continue bearing long, ſome not

more

more than a fortnight, others three weeks or a month; but as to the climbers, as they continue ſhooting and flowering all ſummer, until prevented by the cold in October or November, two different plantings of theſe ſorts, one early in May, the other in June, will furniſh an abundant ſupply of young beans during the whole ſeaſon.

But, as before remarked, that in order to have a long ſucceſſion of Kidney-beans for the table, different modes of culture is practiſed, as the raiſing both dwarfs and climbers in the full ground for the main crops; and by artificial heat, in different ways, for the dwarfs in particular, to have very early crops.

The particular culture, however, both of the dwarfs and climbing ſorts, is exhibited below, each under its proper head.

*Propagation and General Culture of the Dwarf Kinds in the Full Ground.*

All the dwarf Kidney-beans, as well as climbers, are propagated by ſeed annually; and the ſeaſon for planting the natural crops in the full ground, is ſpring and ſummer, at ſeveral different times from April until July, in order to obtain a daily ſupply of young beans during the whole ſeaſon.

Obſerve to chuſe the proper ſorts for the different crops; that is, for the forward crops, you may uſe any of the firſt four early dwarf ſorts, but the early white and negro kinds, are rather the beſt, and longeſt bearers; and for the main crops any of the larger dwarf kinds may be proper, though I ſhould give preference to the ſpeckled dwarf and the Batterſea and Canterbury dwarf kinds, they being all plentiful bearers, and continue long in bearing, as obſerved in their deſcription.

It muſt be remarked, as already hinted, that as Kidney-beans are exotics of a tender nature, they ought not to be planted earlier than April, when the weather is become a little ſettled, for the ſeed is not only impatient of cold moiſture in the ground, and very ſubject to rot; but the young plants that happen to come up early, are often cut off, or greatly injured by the morning froſts, or cold cutting winds that frequently prevail in April and beginning of May. But towards the middle of April, if the weather is fine and dry, we may venture to plant pretty freely in a warm dry ſituation and light ſoil, for the early natural crops; and in the latter end of that month, or beginning of May, it is proper to begin to put in the firſt general crops in the open quarters, &c. and ſo continu, planting ſome every fortnight or three weeks until the middle or latter end of July: whereby you will have a regular ſupply of young Kidney-beans for the table or market from about the middle or latter end of June until October, as aforeſaid.

If, however, you are deſirous to try to have them as early as poſſible in the full ground, you may put in a few about the beginning of April, in dry weather, cloſe under a warm wall, to take their chance; and in a fortnight after put in a few more; if the firſt ſhould fail, theſe may ſucceed; and if both are attended with ſucceſs, one will ſucceed the other in bearing: though it is two to one againſt the ſucceſs of the firſt: but as only a few ſhould be planted ſo early, if they fail, it is only the loſs of a little labour and ſeed, the ground will do again; and if they ſucceed and produce only a few, but a week ſooner than common, they will be eſteemed a rarity either for family uſe, or market.

They all ſucceed in any common ſoil of a garden, remarking however, that for the forward crops it is abſolutely neceſſary to ſelect a dry light ſoil, rejecting heavy and wet grounds, for in ſuch a ſoil moſt of the early-planted ſeed would infallibly rot. Likewiſe for the early crops it is highly requiſite to chuſe a ſheltered warm ſituation full to the ſun, a warm ſouth border, is a very eligible expoſure; but for the main crops, any of the open quarters are proper.

The method of ſowing or planting all the ſorts is in ſhallow drills, from two feet to a yard aſunder, and are all to remain where ſowed. Obſerving the following hints.

For the early crop, chuſing a warm border, and taking advantage of a dry day, draw neat drills with an hoe from north to ſouth, two feet or thirty inches aſunder, and near an inch deep, and to have a greater chance, I would draw alſo a drill cloſe along under the wall, where practicable; in theſe drills drop the beans in a row along the bottom, only about an inch and a half aſunder, as many of this early ſowing may fail; covering them evenly with the earth, not more than an inch deep, for if covered deep at an early time, many are apt to rot, or at leaſt riſe ſtragglingly: as ſoon as they are covered in, lightly rake the ſurface ſmooth, and the work is finiſhed. They will come up in about ten or twelve days or a fortnight: managing them as hereafter directed, and

and the plants will come into bearing in ſix or eight weeks.

For the main crops intended to be planted in May or June, &c. you may employ almoſt any ſituation; either in borders, or in an open expoſure, though an open ſituation in any of the large quarters is the moſt eligible. Drawing drills two feet and a half aſunder, and about one inch deep; or, if deſigned to plant rows of ſavoys or cabbage-plants between, as is often practiſed when neceſſary to huſband the ground to the beſt advantage, the drills ſhould be a yard aſunder at leaſt; drop the beans ſingly along the bottom of each drill, about three inches aſunder, covering them in evenly with the earth about an inch deep, and finiſh with a light raking to ſmooth the ſurface. They will come up, at this ſeaſon, in eight or ten days, and ſometimes ſooner in fine weather; and the plants will come into bearing plentifully in July and Auguſt.

In the above manner continue planting ſome every fortnight or three weeks until July, as we before adviſed; and you will have a plentiful daily ſupply of young beans, from June until Michaelmas or longer.

In planting the latter crops in June and July, when the weather proves very dry and hot, and the ground alſo very dry, it is proper either to ſoak the beans a few hours in ſoft water previous to planting, or inſtead of this let the drills for the reception of the beans be well watered, and immediately plant them as above, and cover them in the proper depth. Either of theſe methods is very adviſable in dry weather in the heat of ſummer; it being neceſſary at ſuch times to promote the free germination of the ſeed, to bring them up ſoon and regularly, which would otherwiſe riſe in a ſtraggling manner.

When the plants of all the above crops are come up, their general culture is as follows.

They are in general to remain where ſowed or planted to yield their produce; obſerving to keep them clean from weeds by occaſional hoeing in dry weather; and when the plants are advanced about three or four inches high, hoe up a little earth to their ſhanks on each ſide, which will forward their growth, and promote their ſtrength: continuing the care of deſtroying weeds as often as their growth ſhall render it neceſſary; which is all the culture required for the dwarf Kidney-beans in the full ground till they arrive at a bearing ſtate, and their produce is fit to gather.

With reſpect to gathering the produce of theſe ſorts of Kidney-beans, it ſhould always be performed when the pods are quite young, or at leaſt before they become large, and the beans in them attain any conſiderable ſize, as they would then be tough, ſtringy, and rank-taſted; and in order to continue the plants in bearing as long as poſſible, the gathering ſhould be regularly repeated about three times a week; for by gathering the pods often and clean, as they become fit, the plants will bloſſom more abundantly, and continue fruiting more plentifully and longer accordingly.

Great quantities of theſe dwarf kinds are cultivated in the gardens and fields in the neighbourhood of London, for ſupplying the markets: where they are brought in large, flat, round baſkets, called junks, from about half a buſhel to a buſhel ſize; which with the aſſiſtance of large cabbage leaves placed all around, are filled with the beans heaped up conſiderably, ſo as to have as much again at top as within; and are thus bound tight with cords, carried over and acroſs, and in that manner carried ſecurely to market in carts or waggons, &c. and there ſold by the baſket, at various prices, according to the ſize of the baſket, and youngneſs and quality of the beans; but at firſt coming in they often fetch from five to eight or ten ſhillings per baſket, and fall by degrees to two ſhillings or half a crown, or a little leſs or more according to the ſize of the baſket, &c.

### *Propagation and Culture of the Climbing Kinds.*

The propagation and culture of the climbing Kidney-beans, commonly called runners, is, they are all raiſed from ſeed annually in ſpring and beginning of ſummer, as obſerved of the dwarfs; and their general culture is nearly the ſame as for thoſe ſorts in the full ground; only they require more room to grow, and muſt have tall ſticks or poles placed for their runners to twine or climb upon, as already noticed. Obſerving none of theſe climbing kinds are proper for early crops, neither in the open ground or hot-beds, ſo ſhould be cultivated principally for ſummer and autumn crops, to come into bearing from July until Michaelmas.

Of theſe climbing kinds I ſhould recommend the ſcarlet runner and its white variety, for the general crops, they being both extraordinary great bearers; continuing in perfection two or three months; and their pods, when even pretty large, remain green, fleſhy, tender, and well flavoured. Some of the Dutch runners, and a few of the other climbers alſo merit culture.

The moſt eligible ſeaſon to begin planting the main crops of all theſe ſorts is the firſt or ſecond week in May, if the weather is fine; for being of a delicate nature like the dwarfs, if planted earlier, both the ſeed and plants are ſubject to danger from the ſame cauſes; however, in a warm ſituation and dry ſoil, a few may be planted in the middle or latter end of April, to take their chance; but remarking, that for the general crops, the moſt ſucceſsful ſeaſon for planting is from May, as aforeſaid, until the beginning of July; but if you plant principally the ſcarlet kind and variety, one planting in May or beginning of June, will come into bearing in July; and if you keep gathering the pods clean, according as they are fit for uſe, the plants will continue ſhooting, bloſſoming, and bearing abundantly until the end of September, or often until the end of October, or till deſtroyed by the cold; but two plantings of any of the ſorts of runners, one in May and the other in June, or early in July, will furniſh a very abundant ſupply the whole ſeaſon of Kidney-beans.

All theſe climbing kinds will proſper almoſt any where in a garden, both in cloſe and open ſituations: chuſing principally a lightiſh ſoil, eſpecially for the forward crops, and the richer the ground the better.

Obſerve, that as all the running kinds require ſupport of ſome ſort to climb upon, they ſhould be planted either in wide rows, for the convenience of placing tall ſticks or poles along each row for the runners of the plants to wind themſelves for ſupport; or planted againſt ſome ſort of fence or treillage-work for the ſame purpoſe of training up and ſupporting the runners. When, however, it is deſigned to train them upon ſticks or poles, let drills be drawn four feet, or four and a half aſunder, eſpecially for the larger kinds, and an inch deep; in which drop the beans, three or four inches apart: cover them in evenly with earth, and rake the ſurface ſmooth. The beans will ſprout in a few days, and come up in leſs than a fortnight.

When the plants are three or four inches high, draw a little earth with an hoe up to their ſtems, to ſtrengthen them and encourage them to ſend forth ſtrong runners. At this time alſo cut down all weeds between the rows.

As ſoon as they begin to puſh their runners, begin to place ſome tall ſticks or poles for them to aſcend upon: as you place the ſticks conduct the runners towards them, in a direction according to their natural mode of climbing, which is generally to the right or contrary to the ſun's motion: they will thus naturally encircle the ſtick or poles, and aſcend to their tops, even if ten or fifteen feet high, producing bloſſoms and fruit from bottom to top.

When intended to plant theſe ſorts againſt fences for ſupport, plant them in a row cloſe along to the fence, and their runners, if againſt a wall or paling, may either be nailed up as they advance in length, or there may be ſome ſtrong packthread ſtring drawn from top to bottom at ſix inches diſtance; the plants will readily twine round them, and ſupport themſelves.

In gathering the produce of all theſe kinds, obſerve the ſame as of the dwarfs, to gather the pods whilſt young and tender; and to continue the plants long in full bearing, always gather the pods clean as they become of proper ſize, and they will continue fruiting abundantly.

If you intend cultivating any of theſe climbing Kidney-beans as flowering-plants, the ſcarlet kind and its variety, as before ſuggeſted, are the proper ſorts. Sow them any time from about the middle or latter end of April until July, in any of the compartments of the pleaſure-garden, in patches, alternately ſcarlet and white ſort, two or three beans in each patch, about an inch deep; and when the plants are up and begin to puſh runners, place tall poles or branchy ſticks for them to climb upon: they will effect a very fine variety all ſummer until October.

They are alſo often employed to run over arbours, and to twine round the ſtems of trees; alſo to run up the ſides of houſes, or againſt walls, either upon poles, or upon packthread-ſtrings, ſuſpended from above, about which they will twine themſelves many feet high, bearing abundance of flowers and fruit: they are likewiſe ſometimes trained to form ſhady private walks, by means of high poles arranged along each ſide, or by ſupport of a

ſort

ſort of treillage-work, ranging ſome tall ſtakes five feet aſunder, railing them along the top with poles, or pan-tile laths; from which ſuſpending ſtrings to the ground, ſix or eight inches aſunder, faſtening them down with pegs: upon theſe ſtrings the plants will climb and form a cloſe hedge. Some perſons are alſo curious enough to arch over the tops of ſuch walks with any long, ſlight, pliable rods, poles, or hoops, ſo train the runners of the plants over to form a ſort of a vaulted roof all the way along. Thus this fine climber may be trained in various ways according to fancy, both for uſe and pleaſure, as may be obſerved in the numerous ſmall pleaſure-gardens in the environs of London; and thoſe not accommodated with gardens, plant them in pots or boxes, to place in windows or balconies, &c. and train the plants upon ſtrings, as juſt above obſerved.

*Early Crops of the Dwarf Kinds by Artificial Heat.*

To have Kidney-beans as early as poſſible, recourſe is had to raiſing the dwarf kinds by aid of artificial heat, by two or three different methods, ſuch as—By raiſing the plants in a hot-bed, an inch or two high, and then plant them out into a warm border—By raiſing and continuing the plants in a hot-bed to bear their crops—By aid of a hot-houſe.

1. By raiſing in a hot-bed for tranſplantation into warm borders.—By this method we may forward Kidney-beans a fortnight earlier than thoſe raiſed entirely in the full-ground: for this purpoſe, towards the latter end of March, prepare a moderate hot-bed, a foot and half depth of dung, covered either with a frame or hand-glaſſes, or arched over with hoops or rods, to be covered with mats; earthing the bed with fine, light, rich mould, ſix inches deep; then having ſome ſeed of the early dwarf ſorts, ſow them pretty cloſe for tranſplantation, either all over the ſurface, an inch or two apart, covering them with earth about half an inch deep; or in ſmall drills two or three inches aſunder, and cover them the above depth; though it will be rather moſt eligible to plant them in the drills by pairs, at three inches diſtance from pair to pair, and the plants can be more readily tranſplanted two and two with balls of earth to their roots; or where only a few is wanted, they may be ſowed in large pots, at about an inch diſtance and half a one deep, and the pots plunged into any hot-bed; and when the plants come up, the pots may be removed by degrees into the full air, to harden the plants for tranſplantation. But it is a good method to plant a quantity of beans in ſmall pots (thirty-twos), three in each pot, plunging the pots in a hot-bed, and when the plants are fit for tranſplantation, they can be readily turned out of the pots with the whole ball of earth about their roots ſo as not to feel their removal.

However, in raiſing the plants in either of theſe methods for tranſplantation in the full ground, your attention is particularly neceſſary to inure them gradually to the full air, by taking off the covers of glaſſes or mats in all mild weather, and only cover them in cold nights; but as they advance in growth, and the weather becomes warmer, they muſt be expoſed by degrees to the full air, day and night, to harden them properly previouſly to their final tranſplantation. Obſerving alſo to allow them frequent moderate refreſhments of water, and let them enjoy the benefit of warm ſhowers.

When they have ſhot out their proper leaves an inch or two broad; and all danger of froſty mornings and other bad weather is apparently over, proceed to plant them out into a warm border, under a wall or other fence. Obſerving particular care to take them up with their roots as entire as poſſible, and with as much earth as will hang about them, thoſe eſpecially that are raiſed by pairs, may be readily taken up, each pair with a ball of earth; and thoſe raiſed in ſmall pots by threes may alſo be eaſily turned out with the whole ball of earth entire; and as to the mode of planting them, thoſe which were raiſed cloſe together, and could not readily be taken up with balls, may be planted by dibble, in rows two feet aſunder, forming ſhallow drills for their reception, in which ſet the plants three or four inches apart; but thoſe with good balls about their roots, ſhould be holed in with a trowel; and if ſome of thoſe are alſo diſpoſed in patches, two or three plants in each, ſo as to be covered occaſionally in cold nights with hand-glaſſes, it will be found very beneficial in forwarding their growth. As ſoon as they are planted, in either method, give a moderate watering to ſettle the earth cloſe about the roots, and let it be repeated in dry weather as there may be occaſion, till the plants have taken freſh-root in their new quarters.

After this keep them clean from weeds, and when a little advanced in growth, draw ſome earth lightly up about their ſhanks; and as the warm ſeaſon advances, if it proves hot and dry, refreſhments of water will forward and ſtrengthen the growth of the plants.

Thus this crop of Kiney-beans will ſometimes arrive to a bearing-ſtate a fortnight ſooner than thoſe raiſed entirely in the natural ground.

2. By Hot-beds entirely.—To have Kidney-beans as early as poſſible, is effected by raiſing the ſmall early dwarfs in hot beds, and continuing them there to attain perfection, whereby they may be forwarded to a bearing ſtate in April and May: the method is this, proceed about the beginning or towards the middle of February, to make a dung hot-bed, for one, two, or more three-light frames, about two feet and a half high in dung: and when the great heat and ſteam are a little abated, earth the bed with light, rich, dry mould, ſix or eight inches thick, for the reception of the ſeed (ſee HOT-BEDS); then having ſome ſeed of the ſmall early dwarf kinds, draw drills from the back to the front of the bed, near an inch deep, and about fifteen or eighteen inches aſunder; here place the beans two or three inches apart, and cover them evenly with the earth the above depth; then put on the lights: but tilt them behind an inch or two high daily, ſo give vent to the ſteam; and when the plants appear, continue every day to admit air to them at all opportunities, in proportion to the temperature of the weather, and heat of the bed, to prevent their drawing weak, and to promote their ſtrength as they riſe in height; beſtow alſo at this time moderate refreſhments of water in ſunny days; and when they are two or three inches high, apply a little earth to their ſhanks; likewiſe ſupport a moderate heat in the bed during the cold weather, by occaſional linings of hot dung: obſerving according as the plants advance in growth, and the warm ſeaſon encreaſes, augment gradually the portion of freſh air daily to harden them by degree, ſo as almoſt to be fully expoſed occaſionally in very warm days, eſpecially when beginning to bloſſom, but keep them cloſe on nights: continue alſo the care of frequent light waterings, which muſt be increaſed in quantity as the plants advance in ſize, particularly when they are in bloſſom, and in a fruiting-ſtate: in their advanced growth, if they preſs much againſt the glaſſes of the frame, it is proper to raiſe it at bottom two or three inches, to give room at top for their free growth; which being neceſſary to promote a plentiful bloom, for furniſhing a proper crop of Beans equal to the expence and trouble requiſite in the culture of ſuch early crops.

They will thus arrive to full growth, and produce early young Beans for the table in April and May.

But to obtain a conſtant ſucceſſion of early Kidney-beans till the natural-ground crops come in, we ſhould proceed with another crop in hot-beds, as above, in three weeks after the firſt hot-bed is made.

In default of frames for the above purpoſes, you may in March effect it with occaſional coverings of mats; that is, make a hot-bed about two feet high of dung, earthing it directly ſix or ſeven inches thick, and ſow the beans as before directed; then arch the bed over with hoops, &c. and cover every night, and all bad weather, with mats: but admit the free air every mild day, gradually hardening the plants as they acquire ſtrength, and give occaſional waterings: thus they will furniſh beans early in May.

3. By Aid of a Hot-houſe.—If you are accommodated with a hot-houſe or ſtove, early Kidney-beans may be obtained with very little trouble at almoſt any time in winter or ſpring: raiſing them in pots, or long narrow trough-like boxes, about a yard long and eight or ten inches broad at top; placing either any where in the hot-houſe, the plants will ſucceed, obſerving as below.

The proper kinds for this purpoſe is the early white or liver-coloured dwarfs: the ſpeckled dwarf alſo ſucceeds very well, and continues long in bearing.

Therefore any time in winter or early in ſpring, you may fill ſome large pots (ſixteens or twenty-fours) or boxes with light rich earth, and place them upon the top of the wall which ſurrounds the bark-bed, or upon ſhelves or in any part of this department where convenient; and in each pot plant four beans, near an inch deep; or, if boxes, plant the beans along the middle, in a ſort of double row, triangular-ways, about four inches aſunder, and the above depth: they will ſoon germinate, and in a few days appear above ground: when they, however, begin to ſprout, it is proper to moiſten the mould with a little water, which will facilitate

cilitate the eruption of the plants out of the earth.

Their culture here is very eaſy: when they are come up, give frequent waterings, which will be requiſite three times a week, at leaſt, in this department, as the earth will dry very faſt; but always keep it moderately moiſt, and the plants will bloſſom freely, and produce a plentiful crop of beans, often in as great perfection as in the full-ground crops.

They ſhould be gathered often, which is the way to continue the plants long in bearing.

A regular ſucceſſion of young Kidney-beans may be obtained in this repoſitory for ſeveral months; by repeated ſowings at about three weeks interval, ſo as to have young plants advancing in pots or boxes in two or three different degrees of growth ſucceeding one another.

But as ſometimes we are ſtraitened for ſtove-room, it may be proper to plant the beans for ſucceſſion crops in ſmall pots (forty-eights) three beans in each, and as theſe will take up but little room, they may be ſtowed any where cloſe together, or between the other larger pots; the plants will come up and be advancing in growth, ſo as when thoſe of the preceding crops are going off, theſe may be readily turned out of the ſmall pots with the whole ball of earth about their roots, and replanted into large pots, &c. to remain for fruiting.

By this practice you will gain a month's growth in the plants, and you may thereby have a conſtant ſucceſſion of beans for the table.

*Saving Seeds of all the Sorts.*

With reſpect to ſaving ſeed of Kidney-beans, all the ſorts ripen plenty in Auguſt and September.

To have perfectly good ſeed, it is proper to ſow a ſufficient quantity in rows on purpoſe, ſuffering the whole crop of the plants to remain without gathering any for uſe: you will thus have the ſeed ripen betimes, and in the higheſt perfection, which is eſſentially neceſſary for thoſe who deſign the ſeed for public ſupply.

In private gardens, however, and many others, they often after having gathered the flower as it were of the principal crops, leave the latter produce of them to grow for ſeed; which, although it may be tolerable good, it is not always ſo large, plump, and fine, as in the former method.

When the ſeed is quite ripe, which is eaſily known by examining a few of the pods, pull up the plants, and ſpread them looſely along in rows, turning them daily that the beans may dry and harden well, which when effected, either threſh them out directly, or lay them up in ſome dry loft or other room till convenient; and when threſhed out, and cleared from the rubbiſh, ſpread them upon ſome clean airy floor, or ſome ſuch place in the dry to harden perfectly, then put them up in bags for next year's uſe.

It is of much importance to have change of ſeed once in two or three years; that is, if you always ſave your own, it is adviſeable either to change a quantity of ſeed with ſome friend at a diſtance, or purchaſe a freſh ſupply once in the above mentioned time; for by ſaving ſeed always in the ſame ground, it will degenerate, the plants will become every year weaker, and deficient in bearing. But by change of ſeed from ſome diſtant place, as above, you will have the different ſorts always in their ultimate ſtate of perfection.

PHILADELPHUS, *Syringa*, or Mock-Orange.

Two hardy, deciduous, flowering ſhrubs compoſe this genus, furniſhing ſome varieties; all noted floriferous plants for the ſhrubbery, riſing ſeveral feet high, branching out into buſhy heads, decorated with large oval leaves, and numerous cluſters of tetrapetalous white flowers.

Claſs and order, *Icoſandria Monogynia.*

*Characters.*] CALIX, is monophyllous, acutely four-parted, and perſiſtent. COROLLA, four large, roundiſh, plane, ſpreading petals. STAMINA, twenty or more awl ſhaped filaments, having erect four-furrowed antheræ. PISTILLUM, a germen under the corolla, ſlender four-parted ſtyle, crowned by ſimple ſtigmas. PERICARPIUM, an oval-acute-pointed, quadrivalved, quadrilocular capſule, containing numerous ſmall oblong ſeeds.

There are but two ſpecies, both hardy deciduous ſhrubs, originally of foreign growth; but one of which has been long a reſident of our gardens, is a very noted ornamental flowering ſhrub, compriſing ſome varieties.

The ſpecies are;

1 PHILADELPHUS *Coronarius.*

*Coronarius-flowered Syringa, or Common Mock-Orange.*] Riſes with many ſhrubby, ſlender,

ſlender, brown ſtems, of a brittle and pithy nature, branching five or ſix feet high, the branches by oppoſite pairs, alternately of contrary directions, jointed, and covered with a brown ſmooth bark; large oval-ſpear-ſhaped, rough, ſlightly-indented, oppoſite leaves; and at the axillas and termination of the branches many large looſe bunches of white, very fragrant flowers; appearing in May and June.

The flowers, both in figure and ſcent, reſemble thoſe of the orange-tree: hence the appellation Mock-orange.

*Varieties.*] Dwarf coronarius Syringa—double-flowered dwarf. Both theſe varieties grow only about two or three feet high, garniſhed with ſmall leaves, and the flowers generally riſe ſingly, but the plants rarely flower.

[2]PHILADELPHUS *Inodorus.*

*Inodorous, or Scentleſs Carolina Syringa.*] Riſes with a ſhrubby ſtem, branching twelve or fourteen feet high; oval-ſpear-ſhaped, entire leaves; and the branches terminated by large, white, ſcentleſs flowers.

Both theſe ſpecies of *Philadelphus* are elegant furniture for the ſhrubbery compartments: the firſt ſort, however, and varieties, are the principal kinds at preſent in our gardens, the ſecond ſort being more rare in this country; but both the ſpecies are equally hardy, and will ſucceed in almoſt any ſoil and ſituation, and produce a profuſion of flowers annually, particularly the Coronarius Syringa, which is in a manner covered with bloom, and exhibit a very ornamental appearance for a month or ſix-weeks, and emits an odoriferous ſcent widely around.

*Their Propagation, &c.*

The propagation of all the ſorts is remarkably eaſy——by ſuckers——layers——and cuttings.

By Suckers.—All the ſorts ſend out numerous ſuckers from the root, which may be ſeparated from the parent plant, any time in open weather from October till March, and planted in nurſery-rows, to remain one, two or more years to obtain ſtrength, and then may be tranſplanted into the ſhrubbery.

By Layers.—Any time from October till March lay a quantity of the young branches, they will be rooted and fit for tranſplantation in autumn following, managing them as directed above for the ſuckers.

By Cuttings.—In October or November plant a quantity of the young ſhoots in any ſhady border, many of them will form proper plants in one year.

PHILLYREA, (*Phillyrea*) Mock-privet.

This genus conſiſts of beautiful ever-green ſhrubs for adorning the ſhrubbery-compartments; riſing from about ſix or eight to twelve or fourteen feet high, branching numerouſly and diffuſely into buſhy heads; cloſely garniſhed with oval moderate-ſized leaves, and cluſters of ſmall monopetalous funnel-ſhaped greeniſh-white flowers.

Claſs and order, *Diandria Monogynia.*

*Characters.*] CALIX, is monophyllous, four-parted at top, and permanent. COROLLA, is monopetalous and funnel-ſhaped, with a ſhort tube below, and the limb or upper part divided into five revolute ſegments. STAMINA, two ſhort filaments with ſimple erect antheræ. PISTILLUM, a roundiſh germen, ſlender ſtyle, and a thickiſh ſtigma. PERICARPIUM, a globoſe unilocular berry, having one large globular ſeed.

There are but three ſpecies, all of which are hardy ever-greens of the ſhrub kind; but the *Phillyrea* and a ſpecies of *Rhamnus*, called *Alaternus*, are often miſtaken for each other, on account of the great ſimilarity in their general port or habit; there is, however, this very obvious diſtinction, the leaves of the *Phillyrea* always grow oppoſite by pairs; thoſe of the *Alaternus* ſtand ſingly in alternate arrangement; beſides there is a claſſic difference in their fructification: the former having only two filaments, and the latter five; ſo that one is of the claſs *Diandria*, the other *Pentandria*. See RHAMNUS *Alaternus.*

The ſpecies of *Phillyrea* are:

[1]PHILLYREA *Media.*

*Middle Phillyrea, or oval-leaved Mock-Privet.*] Hath a ſhrubby upright ſtem, branching diffuſely ten or twelve feet high; oval-lanceolate, almoſt entire, ſmooth, oppoſite leaves; and at the axillas of the branches, cluſters of ſmall greeniſh-white flowers.

*Varieties.*] Privet-leaved—olive-leaved.

[2]PHILLYREA *Latifolia.*

*Broad leaved Phillyrea.*] Hath a ſtrong, ſhrubby, upright ſtem, branching erectly about twelve or fourteen feet high; oval-cordated, ſharply-ſerrated, oppoſite leaves; and at the axillas cluſters of ſmall greeniſh flowers.

*Varieties.*] Prickly ilex-leaved—ſlightly-ſerrated leaved.

[3]PHIL-

3PHILLYREA *Anguſtifolia.*

*Narrow-leaved Phillyrea.*] Hath a ſhrubby ſtem, branching moderately about eight or ten feet high; long, narrow, ſpear-ſhaped, very entire, oppoſite leaves; and at the axillas of the branches cluſters of ſmall whitiſh flowers.

*Varieties.*] Roſemary-leaved——lavender-leaved—ſtriped-leaved.

All theſe three ſpecies and reſpective varieties, flower annually in March; the flowers are univerſally monopetalous hermaphrodites, ſmall and greeniſh, ſo make no ſhow; and in all the ſorts are ſucceeded by ſmall round berries, ripening in autumn to a black colour, each containing one ſeed. See the *Characters.*

They are all delightful ever-green ſhrubs, of a free eaſy growth, with long ſlender branches, covered with a browniſh or greyiſh bark, and cloſely garniſhed with their beautiful foliage the year round; which are generally of a thick, ſtiff conſiſtence, with a ſmooth gloſſy ſurface, appearing very ornamental at all ſeaſons; ſo that the ſhrubs are finely adapted to all the ſhrubbery compartments in aſſemblage with other ever-greens: they alſo appear well when detached here and there as ſingle objects; and they formerly were often planted for internal hedges, to divide the quarters of wilderneſs-works, &c. in which they have a beautiful effect: they are alſo well calculated for planting to hide any naked or old diſagreeable wall, &c. eſpecially the boundary walls of fore courts or other principal parts; in which they may be intermixed with a *Alaternus* for a variety, training their branches cloſe to the wall, and they will ſoon ſpread and cover it effectually; when they may either be ſuffered to branch according to nature, or may be trimmed cloſe every year in ſpring and ſummer.

No good ſhrubbery, however, ſhould be without a collection of theſe fine ever-greens, diſpoſed in the moſt conſpicuous points of view, there ſuffered to branch in their own rural manner, only juſt regulating with your knife any very ſtraggling branches.

### *Their Propagation.*

The propagation of all the three ſpecies of this genus is by ſeed and by layers.

By Seed.—This ſhould generally be ſowed in autumn, ſoon after it is ripe, and probably it will come up the ſpring following; tho', for the moſt part the ſeed of all theſe plants remain until the ſecond ſpring before they germinate; chuſe, however, a light ſandy ſoil for the reception of the ſeed, which ſow evenly, either all over the ſurface, covering it with earth an inch deep, or in ſhallow flat drills about the ſame depth: keep the earth very clean from weeds, both before and after the appearance of the ſeedlings: giving alſo frequent waterings in dry weather. Obſerving, it is proper to let them have two years growth in the ſeed-bed: remark, however, at the approach of winter, it will be proper to arch the bed over with hoops, or rods, in order to ſhelter the ſeedlings with mats in time of ſevere froſt for they are tender whilſt young; but after the ſecond ſummer's growth they become tolerably hardy, and may then be planted out either in autumn following, or in the enſuing ſpring, February or March, when the weather is ſettled, planting them in nurſery-rows to remain two or three years, or more, to acquire due ſize for the ſhrubbery.

By Layers.—Autumn is the beſt ſeaſon, though it may alſo be performed in winter and ſpring; chuſing the young ſhoots, which lay either by ſlit-laying, or by twiſting at a joint, and they will be rooted by autumn following; when they may be ſeparated from the parent plant, and planted in nurſery-lines, to remain till fit for the ſhrubbery-plantations.

PHLOMIS, Jeruſalem Sage, and *Leonurus.*

This genus furniſhes ſome eminent ſhrubby and under-ſhrubby ever-greens, for the pleaſure-ground and green-houſe collection; all of which are of upright growth, garniſhed moſtly with ſimple entire leaves, in ſome ſorts aſſuming a beautiful hoary whiteneſs, and monopetalous, ringent, very ornamental flowers.

Claſs and Order, *Didynamia Gymnoſpermia.*

*Characters.*] CALIX, is monophyllous, tubular, oblong, five-angled, and permanent. COROLLA, is monopetalous, with an oblong tube, ringent above, having the upper lip oval, arched, and reflexed; and the under three-parted, the middle part large and obtuſe. STAMINA, two long and two ſhort filaments, and oblong antheræ. PISTILLUM, a quadripartite germen, a ſtyle the length of

of the ſtamina, and a bifid acute ſtigma. PERICARPIUM, none, four naked ſeeds lodged in the calix.

There are many ſpecies, but not more than four common to the Engliſh gardens, all of which are of a ſhrubby nature, two of them hardy for the ſhrubbery, and two for the green-houſe.

*Hardy Kinds for the Shrubbery.*

Theſe ſorts are ever-greens, and are remarkable in having their branches and leaves of a hoary white colour, in which they exhibit a ſingular variety.

[1]PHLOMIS *Fruticoſa.*

*Shrubby Yellow Phlomis, commonly called Jeruſalem Sage.*] Hath a ſhrubby thick ſtem, branching irregularly four or five feet high, the ſtem and older branches having a looſe ragged bark, and the young branches four-cornered and woolly; roundiſh-oblong, crenated, hoary-whitiſh leaves, by oppoſite pairs on woolly foot-ſtalks; and from the upper parts of the young ſhoots, large whorled bunches of yellow flowers. In June, July, and Auguſt.

*Varieties.*] Common broad-leaved—narrow-leaved—dwarf Cretan ſage-ſhrub.

[2]PHLOMIS *Purpurea.*

*Purple Portugal Phlomis.*] Hath an under-ſhrubby ſtem, branching four feet high, having ſlender, angular, white branches, oblong, cordated, hoary leaves; and from the joints of the branches whorls of deep-purple flowers. In June and July.

Both theſe ſpecies proſper in the open ground, and as they retain their hoary-white leaves all the year, are highly ornamental in ſhrubberies; they, however, were formerly kept in pots, and treated as green-houſe plants; but this is unneceſſary unleſs for variety, for they will ſucceed in any of the ſhrubbery compartments the year round.

*Green-houſe Kinds.*

Theſe ſorts were formerly of the genus *Leonurus*; but modern botaniſts have ranged them as ſpecies of *Phlomis*.

[3]PHLOMIS *Leonurus.*

*Leonurus, or Lion's-Tail, commonly called African Scarlet Leonurus.*] Riſes with a ſhrubby branching ſtem ſeven or eight feet high, having four-cornered branches; ſpear-ſhaped, ſerrated, oppoſite leaves; and towards the ends of the branches, whorls of cloſe-ſitting ſcarlet flowers, having ten-angled cups indented into ten parts; flowering in October and November.

*Variety.*] With variegated leaves.

[4]PHLOMIS *Nepetæfolia.*

*Nepeta-leaved Cape Leonurus.*] Riſes with a ſhrubby branching ſtem, a yard high, having four-cornered branches; oval leaves, oppoſite by pairs; and whorls of ſcarlet flowers, having ten-angled cups, indented into ſeven equal parts; flowering in October and November.

All theſe four ſpecies of *Phlomis* have great merit as ornamental plants, both as ever-greens, and for the beauty of their flowers, as they all flower very ornamentally every year in our gardens; thoſe of the *Leonurus* kinds in particular, make a fine appearance; but the flowers of all the ſorts are numerous, and being collected into large verticilli towards the ends of the branches, are very conſpicuous; they are univerſally monopetalous, ringent, and hermaphrodite. See the *Characters.*

The two hardy kinds are choice ornaments for the ſhrubbery, their hoary branches and leaves will exhibit a delightful contraſted variety in aſſemblage with other different ever-greens; ſuffering them to branch in their own way.

The two green-houſe kinds highly merit culture for the beauty of their flowers in particular; they muſt be potted in rich earth, and managed as other ſhrubby exotics of the green-houſe collection.

*Their Propagation.*

The propagation of all the ſorts is by layers and cuttings.

By Layers.—The two hardy ſorts in particular grow freely by layers, chuſing the young branches, and lay them in the common way any time in the year, they will readily ſtrike root, and commence proper plants by autumn after, when they ſhould be tranſplanted.

By Cuttings.—Plant a quantity of young ſhoots in ſpring or ſummer, in a ſhady border; give plenty of water in dry weather; many of them will root and make good plants, by the next autumn.

Remark, however, the cuttings of the green-houſe kinds, ſhould, if in ſpring, be planted in pots, in order to be continued in ſhelter until May; or if the pots are plunged in a hot-bed it will greatly forward their root-

ing; though young ſhoots planted in June or July in a bed or border of rich earth, many of them will take root, but may be much forwarded if covered down cloſe with hand-glaſſes, removing the glaſſes when the cuttings begin to ſhoot.

PHLOX, *Lychnidea*, or Baſtard-Lychnis.

The plants of this genus are herbaceous, fibrous-rooted, flowery perennials for adorning the pleaſure-garden; riſing with upright annual ſtalks, from one to two or three feet high, garniſhed with ſpear-ſhaped and oval leaves, and terminated by cluſters of monopetalous, hypocrateriforme, purple or reddiſh flowers.

Claſs and Order, *Pentandria Monogynia*.

*Characters.*] CALIX, is monophyllous, quinque-dented, and permanent. COROLLA, is monopetalous, and hypocrateriforme, with a cylindric crooked tube, and a plane limb, divided into five obtuſe ſegments. STAMINA, five filaments within the tube, and antheræ placed in the chaps of the corolla. PISTILLUM, a conical ſlender ſtyle, and trifid acute ſtigma. PERICARPIUM, an oval, trigonal, trivalvular, trilocular capſule, having one oval ſeed in each cell.

There are about nine or ten ſpecies, the moſt material of which for our purpoſe are the following ſix ſorts.

[1]PHLOX *Glaberrima*.

*Smooth Virginia Lychnidea.*] Hath creeping perennial roots; upright, herbaceous, ſmooth ſtems, near two feet high; narrow, ſpear-ſhaped, ſmooth, oppoſite leaves; and the ſtalks terminated by corymboſe cluſters of reddiſh flowers. Appearing in June or July.

[2]PHLOX *Carolina*.

*Carolina Shining-leaved Lychnidea.*] Hath a ſtrong, creeping, perennial root; upright rough ſtems, two feet high; ſpear-ſhaped, ſtiff, ſhining, ſeſſile leaves, by pairs oppoſite; and the ſtalks terminated by a flat corymbus of deep purple flowers. Appearing in July.

[3]PHLOX *Paniculata*.

*Paniculated American Phlox, or Lychnidea.*] Hath perennial roots; upright, herbaceous, branchy ſtems, two or three feet high; ſpear-ſhaped, rough-bordered, cloſe-ſitting, oppoſite leaves; and the ſtalks terminated by a paniculated-corymbus of pale-purple flowers. Appearing in July and Auguſt.

[4]PHLOX *Divaricata*.

*Divaricated Blue Virginia Phlox, or Lychnidea.*] Hath perennial roots; herbaceous, ſlender, weak, divided ſtems, having the branches divaricated or ſpreading from each other; broad, ſpear-ſhaped, ſeſſile leaves, the upper ones placed alternately; and pedunculi by pairs, ſupporting looſe bunches of light-blue flowers. Appearing in May and June.

[5]PHLOX *Maculata*.

*Maculated or Spotted ſtalked Virginia Phlox.*] Hath a perennial root; upright, taper, rough, purpleiſh, white, and red-ſpotted ſtems, a yard high, branching by oppoſite pairs; ſpear-ſhaped, ſmooth, amplexicaule, oppoſite leaves; and the branches terminated by a corymbus of bright-purple flowers. Appearing in July and Auguſt.

[6]PHLOX *Piloſa*.

*Hairy Virginia Phlox.*] Hath a perennial root; upright, ſingle, ſlender ſtalks, about a foot high; ſpear-ſhaped, acute, hairy, ſeſſile leaves; and the ſtalks terminated by a corymbus of light-purple flowers. Appearing in June and July.

All theſe ſix ſpecies of *Phlox* are hardy perennials, originally from North America; durable in root, but renew their ſtalks annually. Conſidered as flowery plants, they merit culture in every good garden, for they flower very ornamentally: the flowers are all monopetalous, ſalver-ſhaped, and collected into large conſpicuous bunches at top, continuing three or four weeks in beauty, but are rarely ſucceeded by ripe ſeeds in England.

They will proſper in any of the compartments of the pleaſure-garden, but are particularly well adapted for embelliſhing the principal borders, &c.

Moſt of the ſorts may be had at the public nurſeries; and the proper ſeaſon for removing them is in autumn when their ſtalks decay, or early in ſpring before they begin to ſhoot.

*Propagation of all the Sorts.*

The propagation of all the ſorts is by parting the roots, and by cuttings of their young ſtalks.

By Parting their Roots.—Autumn, when their ſtalks decay, is the beſt ſeaſon for this. Moſt of the ſorts afford a ſufficiency of offſets for propagation, which are to be ſeparated in the uſual way, not too ſmall; planting

The firſt ſpecies, *Phytolacca Decandria*, is the ſort the moſt commonly known and cultivated.

The propagation of both the ſpecies is by ſeed, ſowed in ſpring, in any bed or border of light earth, in ſhallow drills half an inch deep; and when the plants are come up three or four inches high, plant them out in moiſt weather, either in nurſery-rows till autumn, or at once into the places where they are to remain.

PINUS, Pine-tree, including the Fir-tree, &c.

This genus compriſes a grand collection of noble ever-green trees, and one deciduous kind, obtaining great height and magnitude, and of high value and worth, both for their beautiful growth to embelliſh ornamental plantations, and for their great utility as timber-trees. All of them cloſely garniſhed with ſmall linear aceroſe leaves; and monoecious, amentaceous, apetalous flowers, ſucceeded in the females by a ſcaly conic ſeed-veſſel, called a cone.

Claſs and order, *Monoecia Monadelphia*.

*Characters* ] CALIX, male and female flowers, ſeparate on the ſame plant, having ſcaly calices, the males being collected into ſcaly bunches, and the females into an imbricated cone, compoſed of oblong, rigid, permanent ſcales, each containing two florets. COROLLA, no petals, each floret conſiſting only of the fructifications. STAMINA, many monadelphous filaments having erect antheræ. PISTILLUM, a very ſmall germen, awl-ſhaped ſtyle, and ſimple ſtigma. PERICARPIUM, none, the ſeeds are lodged in the calycinal ſcaly cone, each ſeed is an oblong-oval nut, furniſhed with a membranaceous wing.

To this genus of *Pinus*, Linnæus has added *Abies*, the Fir-tree, *Cedrus* and *Larix*, the Cedar of Lebanon and Larch tree; which former botaniſts conſidered as ſo many diſtinct genera; but their generic characters being the ſame in every reſpect as the *Pinus*, they are now all ranged as ſpecies only of that genus: all the ſpecies of which, except the *Larix*, are ever greens, and riſe to a vaſt height, ſome above an hundred feet, with perfectly ſtraight ſtems; branching all around almoſt to the very bottom, moſtly in circular tiers or courſes, at diſtances one above another, ſpreading regularly like rays, in a ſomewhat horizontal poſition, ſhortening gradually towards the top, ſo as to give the head a conical form; which being very cloſely garniſhed with linear, or very narrow aceroſe leaves; they appear with a beautiful majeſtic grandeur, and are all ſo very hardy, that they proſper in almoſt any ſoil and ſituation; and are exceedingly well adapted both for ornamental and profitable plantations.

There are about ten or twelve diſtinct ſpecies: thoſe commonly called Pine-trees, are very diſtinguiſhable by ſight from the Firs, and both of theſe from the Cedar of Lebanon and Larch-tree. The leaves of the former (Pine-tree) come out by two, three, or five from the ſame point and ſheath: thoſe of the Firs come out ſingly, and the Cedar of Lebanon and Larch ariſe in bunches from the ſame point, thoſe of each bunch ſpread out every way.

*Pine Kinds; having two, three or five Leaves in each Sheath.*

There are about five or ſix ſpecies of theſe kinds, with ſome varieties; all hardy evergreen trees.

[1]PINUS *Sylveſtris*.

*Wild Pine-tree, or Scotch Pine, moſt commonly called Scotch Fir* ] Riſes with an upright, perfectly ſtraight ſtem, from about fifty to ſeventy feet high, or more, branching regularly all around; ſhort, ſmooth, dark-green leaves, two in each ſheath, but the primordial, or firſt leaves, come ſingly; and ſhort pyramidal acute cones.

It grows wild in gravelly woods, in many of the northern parts of Europe, and in great plenty in the Highlands of Scotland: hence the name *Scotch Pine*, &c.

There are vaſt plantations of this valuable tree in moſt parts of Scotland, where they beautifully enrich gentlemen's eſtates; in which we may ſee them proſper in all expoſures and ſoils, even on mountains and rocks, as well as in low moiſt ground; ſo may be cultivated to great advantage in any ſituation, and in places where many other trees, &c. would not thrive.

The timber of this tree is the common red, or yellow deal, of great value for all kinds of buildings.

*Variety.*] [2]PINUS *Pinaſter*.

*Pinaſter, or Foreign Wild Pine.*] Riſes with an upright, ſtraight ſtem, from fifty to ſixty or ſeventy feet high, ſending out large, horizontally ſpreading, yellowiſh branches, irregularly; very long, ſmooth leaves, two in each

each ſheath, but the primordial ones ſingly; and very long, pyramidal, acute cones.

[3]PINUS *Pinea.*

*Pinea, or Italian Stone Pine.*] Riſes with an upright, ſtraight ſtem, fifty or ſixty feet high, having a roughiſh bark; very long, ſea-green leaves, two in each ſheath, with the primordial ones ſingly and ciliated; and thick, roundiſh, turbinated, cloſe cones; having large, eatable kernels.

It is a native of Italy and Spain, where the kernels of the cones are in much eſteem for eating, and are very wholeſome, and good for colds and conſumptions.

[4]PINUS *Strobus.*

*Strobus Pine-tree, commonly called Weymouth Pine.*] Riſes with an upright, very ſtraight ſtem, an hundred feet high, or more, branching widely around, having a very ſmooth bark; long, ſlender, duſky-green leaves, by fives in each ſheath; and long, ſlender, looſe cones.

It is a native of North America, and firſt cultivated here on Lord Weymouth's eſtate, hence the name, *Weymouth Pine.* It is a tree of admirable beauty, and the prodigious height and magnitude which it attains, renders it of great value for its timber, and makes the moſt excellent maſts for ſhips.

[5]PINUS *Tæda.*

*Tæda, or Torch Pine, or Three-leaved Virginia Swamp Pine.*] Riſes with an upright ſtem, to a great height; having very long, ſlender leaves, by three in each ſheath; and large, long, looſe cones.

It grows naturally in low ſwampy grounds in Virginia and Canada.

[6]PINUS *Cembra.*

*Cembra, or Mountain Siberian Pine.*] Riſes with an upright ſtraight ſtem, forty or fifty feet high; having long, ſlender, very ſmooth, light-green leaves, five in a ſheath; and large cloſe cones.

The above ſix ſorts are the principal ſpecies of the Pine kind, but there are ſeveral varieties that belong to one or other of them, and are diſtinguiſhed in the nurſeries by the following names and deſcriptions.

Frankincenſe three-leaved American Pine—Virginia three-leaved, prickly-coned Pine—Virginia cluſter-coned Pine—Mugho two and three-leaved mountain Pine—Jerſey two-leaved prickly-coned Pine—Aleppo ſpreading-branched, two-leaved Pine—dwarf two-leaved American Pine.

*Fir Kinds (Abies) having Solitary or Singly-placed Leaves.*

There are about ſix ſpecies of theſe ſorts, with ſome varieties; all hardy ever-green trees.

[7]PINUS *Abies.*

*Abies, or Common Fir-tree, commonly called Norway Spruce Fir.*] Riſes with an upright ſtem, to a great height, branchy to the bottom; ſolitary, narrow, awl-ſhaped, ſharp-pointed, ſmooth, dark-green leaves, ſtanding two ways; and large cones, ſix or eight inches long, hanging downward.

*Variety.*] Long-coned Corniſh Fir, having longer leaves, and cones eight or ten inches long.

They grow naturally in Norway, and other northern parts of Europe, where they are commonly denominated Pitch-firs, becauſe in thoſe countries great quantities of pitch, &c. is extracted from them; their timber is the white deal, ſo greatly eſteemed by the joiners.

[8]PINUS *Canadenſis.*

*Canada Spruce Fir.*] Riſes with an upright, ſtraight ſtem, to a great height, branching from bottom to top; ſolitary, very narrow, ſhortiſh, obtuſe-pointed, dark-green leaves; and ſmall cloſe cones an inch long.

*Varieties.*] Canada white ſpruce——red ſpruce—and black ſpruce Fir; differing from each other principally in the colour of the cones. Theſe are all natives of North America.

[9]PINUS *Picea.*

*Picea, or Pitch-tree, commonly called Silver Fir.*] Riſes with an upright, very ſtraight ſtem, ſixty or ſeventy feet high, or more, branching thinly, having a ſmooth bark; ſolitary flat leaves, emarginated at top, marked with two ſilvery-white lines underneath; and has very long erect cones.

It grows naturally in the Alps, Germany, and in the Highlands of Scotland, and is remarkable for affording plenty of turpentine, &c.

[10]PINUS *Balſamea.*

*Balſamea, or Balm of Gilead Fir.*] Riſes with an upright, ſtraight ſtem, very branchy almoſt to the bottom; cloſely garniſhed with ſolitary, flat, obtuſe leaves, ſlightly emarginated at top, of a dark-green above, and marked with whitiſh lines underneath; and ſmall roundiſh cones.

*Variety.*] With variegated leaves.

This tree and variety are natives of North America; they are remarkable for their balſamic

### *Annual Kinds.*

There are two ſpecies of the annual kind proper for our collection, both exotics, but hardy enough to proſper in the open borders.

[3]PHYSALIS *Angulata.*

*Angular Winter Cherry.*] Riſes with an upright firm ſtem, dividing into numerous angular, ſmooth branches, growing two or three feet high; oval indented leaves; and at the axillas and ends of the branches ſmall white flowers, ſucceeded by large yellowiſh berries.

*Varieties.*] There are many varieties differing in ſome reſpect or other, but all retain the ſpecific difference of having angular branches, and ſmooth oval leaves.

[4]PHYSALIS *Pubeſcens.*

*Pubeſcent, or Downy Winter Cherry.*] Riſes with a ſhort ſtem, dividing low into numerous ſpreading branches, oblong, downy-viſcous leaves; and at the axillas greeniſh-yellow pendulous flowers; ſucceeded by large yellowiſh berries.

*Varieties.*] There are many varieties differing from one another in ſome peculiar mode of growth.

Both theſe ſpecies and reſpective varieties flower in June and July, and the berries ripen in autumn.

### *Shrubby Green houſe Kinds.*

Of theſe kinds there are but two ſpecies common to the Engliſh gardens, both of which are of a ſhrubby nature; and being exotics of warm countries require ſhelter of a green-houſe here in winter.

[5]PHYSALIS *Somnifera.*

*Somniferous Sicilian Winter Cherry.*] Hath a ſhrubby ſtem, branching three or four feet high, with the branches erect; oval, ſpear-ſhaped, downy, entire leaves; and at the axillas greeniſh-white flowers in cluſters; ſucceeded by ſmall red berries.

[6]PHYSALIS *Flexuoſa.*

*Flexuoſe Indian Winter Cherry.*] Hath a ſhrubby ſtem, branching four or five feet high, with long flexuoſe branches; oblong, almoſt cloſe-ſitting leaves; and at the axillas cluſters of ſmall greeniſh-yellow flowers; ſucceeded by purpleiſh berries.

Both theſe plants flower in June and July, and in favourable, warm, dry ſeaſons the berries ripen in autumn.

### *Hot-houſe Kinds.*

There are two ſpecies for the ſtove, both of them ſhrubby; and being natives of the hot parts of India, &c. require the conſtant aid of a ſtove to preſerve them in this country.

[7]PHYSALIS *Arboreſcens.*

*Arboreſcent, or Tree-like Campeachy Phyſalis.*] Hath a woody upright ſtem, dividing and branching out at top ten or twelve feet high; oval hairy leaves alternate below, and oppoſite above; and at the axillas almoſt ſolitary, yellowiſh revolute flowers; ſucceeded by ſmall red berries, in dark purple bladders.

[8]PHYSALIS *Curaſſavica.*

*Winter Cherry of Curaſſao.*] Hath an under-ſhrubby branching ſtem, riſing two or three feet high; oval, downy alternate leaves; and at the axillas ſmall, cloſe-ſitting, yellow flowers; rarely ſucceeded by berries in England.

The above eight ſpecies of *Phyſalis* are the chief ſorts at preſent in our gardens; they flower principally in June, July, and Auguſt: the flowers are ſmall, and conſiſt each of one rotated, or wheel-ſhaped, quinquefid petal; which in moſt of the ſpecies are ſucceeded by ripe berries incloſed in the calix, forming an inflated, or bladdery-like, coloured cover, opening at top and diſcover the fruit, and appears very beautiful in the autumn ſeaſon.

All the ſorts are retained in curious gardens as plants of ornament.

The herbaceous ſpecies, both of the perennial and annual kinds, ſucceed in the open ground; the former all the year, and the latter in ſummer, and make a pretty appearance, eſpecially in autumn, with their beautiful cherry-like red berries: obſerving, however, that as the ſecond ſort, *Phyſalis Viſcoſa*, is rather of a tender nature, ſome plants ſhould alſo be be kept in pots, to move to occaſional ſhelter of a garden-frame, &c. in froſty weather.

The ſhrubby kinds, both of the green-houſe and hot-houſe, muſt always be kept in pots for moving to ſhelter of thoſe conſervatories, and managed as other ſhrubby exotics of each collection.

### *The Propagation of all the Sorts.*

The propagation of all the ſorts is eaſily effected by ſeed; and the herbaceous perennials likewiſe by parting the roots; and the

ſhrubby

ſhrubby kinds of the green-houſe and ſtove alſo by cuttings; ſee each ſort under a ſeparate head, as follows:

Herbacious Perennial Kinds.—Theſe ſorts may be multiplied abundantly by ſeed, and by parting the roots. 1. By Seed.—Sow it in autumn as ſoon as ripe, or in ſpring, in a bed or border of light, dry ſoil, covering them half an inch deep; and when the plants are come up about two or three inches high, prick them out in nurſery-rows to ſtand till autumn, then tranſplant them where they are to remain. 2. By parting the Roots.——They multiply plentifully by the root, which may be parted any time in open weather from October till March; every ſlip having fibres at bottom, and a bud at top, will form a good plant.

Annual Kinds.—Both theſe ſorts are raiſed from ſeed annually in ſpring, in April, either in a warm border, or in a hot bed, to bring them more forward into flower: ſow the ſeed about a quarter of an inch deep; and when the plants are come up about three inches high, prick them out, which if alſo in a hot-bed for a month, it will forward them greatly; hardening them gradually to the open air, then tranſplant them in moiſt weather with balls, into the borders or places where they are to flower.

Green-houſe Kinds.—They are beſt propagated by ſeeds in a hot-bed in ſpring; and when the plants are a few inches high, prick them out into ſeparate ſmall pots, giving water and occaſional ſhade: afterwards manage them as other ſhrubby exotics of the green-houſe.

Cuttings of theſe ſorts may alſo be ſtruck by aid of a hot-bed, in ſpring or ſummer.

Hot-houſe Kinds.——They may be raiſed both from ſeed ſowed in pots, and plunged in a hot-bed; and by cuttings in ſpring or ſummer, planted in pots and plunged in any good hot-bed, or in the bark-bed of the ſtove, &c.

PHYTOLACCA, American Nightſhade.

It furniſhes principally herbaceous plants, one or two of which, hardy perennials, are retained as ornamental plants for the pleaſure-garden; riſing ſeveral feet high, adorned with large oblong and oval entire leaves; and cluſters of pentapetalous flowers.

Claſs and order, *Decandria Decagynia.*

*Characters.*] CALIX, none. COROLLA, five roundiſh, concave, ſpreading, coloured, permanent, reflexed petals. STAMINA, ten, eight, or twenty ſilaments, in different ſpecies, and roundiſh antheræ. PISTILLUM, an orbicular depreſſed germen, divided on the outſide, and terminated by ten very ſhort patent, reflexed ſtyles, having ſimple permanent ſtigmas. PERICARPIUM, an orbicular, depreſſed, ten-furrowed, decemlocular, berry, having a ſingle kidney-ſhaped ſeed in each cell.

There are four ſpecies, three herbaceous, and one ſhrubby; the moſt material of which are the two following herbaceous perennials.

[1]PHYTOLACCA *Decandria.*

*Decandrous Virginia Phytolacca, or Common American Nightſhade.*] Hath a very thick, fleſhy, divided, deeply-penetrating root; upright, ſtrong, herbaceous ſtems, dividing and branching ſix or ſeven feet high, covered with a purpleiſh bark; garniſhed with large, oblong, entire leaves, placed irregularly; and at the joints and axillas of the ſtalks long pedunculi, ſuſtaining each a large cluſter of ſmall decandrous and decagynous, purple flowers; ſucceeded by depreſſed ten-furrowed berries, ripening in autumn.

[2]PHYTOLACCA *Octandria.*

*Octandrous Mexican Phytolacca.*] Hath a fleſhy root; upright, ſtrong, herbaceous ſtem, dividing and branching two or three feet high; oval, ſpear ſhaped, veined leaves, placed irregularly; and from the ſides of the branches long pedunculi, terminated by ſpikes of cloſe-ſitting, octandrous and octogynous, white flowers; ſucceeded by depreſſed, ten-furrowed berries, ripening in autumn.

Both theſe ſpecies flower in July and Auguſt, the flowers are numerous in each cluſter and ſpike; each flower being compoſed of five permanent petals, &c. ſucceeded by berries, as deſcribed in the characters, furniſhing plenty of ripe ſeed in favourable autumns.

The juice of the berries ſtain linen and paper of a fine purple colour, but is not laſting.

Theſe plants are perennial in root, but annual in ſtalk, which riſing in ſpring, decays at the approach of winter.

They may be employed as plants of ornament in any of the compartments of the pleaſure-garden, but principally in a dry ſituation, where they will abide in root many years, particularly the firſt ſort, and ſhoot up new ſtalks every ſpring, and produce their flowers and fruit abundantly, and make a good appearance.

the ſtrongeſt ſlips where they are to remain to flower, and the ſmaller in nurſery-rows for a year to get ſtrength.

By Cuttings —If any ſorts furniſh but a ſparing ſupply of off-ſets from the roots, recourſe may be had to cuttings of the young ſtalks: May, when the ſhoots are but a few inches high, is the proper ſeaſon; cutting off a quantity cloſe to the ground, and trim off their tops; then plant them in a bed or border of good earth, or in large pots, ſeveral in each; giving water directly, repeating it often in dry weather, with occaſional ſhade from the ſun till rooted; or, if they are planted cloſe, and covered with hand-glaſſes it will forward their rooting; removing the glaſſes when they begin to ſhoot.

PHOENIX, Great Palm, or Date-tree.

It conſiſts of one ſpecies only, an evergreen tree of great height and ſingularity, an exotic of India, and retained here in our ſtoves for variety.

Claſs and order, *DioeciaTriandria.*

*Characters.*] CALIX, male and female ſpadiceous flowers on different plants, having an univalvular general ſpatha, protruding a branching ſpadix, compoſed of many florets, each with a three-parted perianthium. COROLLA, three oblong concave petals in the males, and in the females is compoſed of ſix parts. STAMINA, three very ſhort filaments, and oblong linear antheræ. PISTILLUM, a roundiſh germen, awl-ſhaped ſtyle, and acute ſtigma. PERICARPIUM, an oval, baccaceous, unilocular fruit, containing one nearly-oval, very hard ſeed.

The ſpecies is:

PHOENIX *Dactylifera.*

*Dactyliferous, or Date-bearing Palm; Greater Palm, or Date-tree.*] Riſes with an upright, ſtraight, undivided, branchleſs trunk, from fifty to an hundred feet high, ſtudded with rugged protuberances, the veſtiges of fallen leaves, and the middle filled with pith; no proper branches, but crowned at top with a vaſt columnar, ſpreading cluſter of pinnated branch-like leaves, ſix or eight feet long, compoſed of long, ſword-ſhaped, complicated, ſtiff, alternate folioles; and amidſt the leaves very long ſpadiceous cluſters of whitiſh flowers; ſucceeded in the female-plants by cluſters of large oval berries.

The berries of this tree are the dates of the ſhops, imported hither from Africa and the Eaſtern countries.

This ſingular tree, like the reſt of the Palm tribe, have no other branches than its large leaves, each of which being a compoſition of a leaf and branch, always ariſing from the top, and as the old leaves fall, the ſtem forms itſelf and advances in height; but although the leaves grow very tall in a few years, yet the ſtem advances but ſlowly, and can never be expected to arrive at a flowering and fruiting-ſtate in this country; it, however, merits a place in our hot-houſe collections for its ſingularity.

It muſt always be kept in pots of rich earth, and placed conſtantly in the ſtove; and if there plunged in the bark-bed, it will make the greater progreſs: obſerving to give proper waterings, and ſhift it occaſionally into larger pots.

The propagation of this plant is by ſeed, procured from abroad, which ſow as ſoon as poſſible, in pots of light rich earth, and plunge them in a tan hot-bed, or in the bark-bed in the ſtove; giving moderate waterings, they will ſoon come up, which, when a few inches high, prick into ſeparate ſmall pots, plunging them in the hot-bed, or in the bark-bed, as aforeſaid; where they may remain, giving frequent waterings, and ſhift them into larger pots, according as their progreſs of growth may require.

PHYLICA, Baſtard Alaternus.

This genus is compoſed of ſhrubby evergreen exotics of Africa, for the green-houſe collection; are of branchy growth, obtaining three or four feet ſtature, garniſhed with ſmall ever-green leaves; and cluſters of pentapetalous whitiſh flowers at the ends of the branches.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX, many florets collected into a head, ſituated in one common receptacle, each having a monophyllous, five-parted, permanent cup. COROLLA, each floret is compoſed of five acuminated ſquamulæ ſituated in the baſe of the diviſions of the calix. STAMINA, five ſmall filaments under the ſquamulæ, and ſimple antheræ. PISTILLUM, a roundiſh, trilobed, trilocular, trivalvate capſule, having a roundiſh ſeed in each cell.

The moſt material ſpecies in the Engliſh gardens are the three following:

PHYLICA *Ericoides.*

*Heath-leaved Phylica.*] Hath a low ſhrubby ſtem, divided into many ſpreading branches, forming

forming a bushy head, about three feet high; closely garnished with very narrow, small, heath like, close-sitting leaves, in verticilli round the branches; and all the branches terminated by close clusters of white flowers; in autumn and winter.

[2]PHYLICA *Plumosa.*

*Plumose Phylica.*] Hath a low shrubby stem, dividing and branching about a yard high; narrow awl-shaped leaves, hairy at top; placed alternately on every side of the branches, and the branches terminated by close downy heads of fringed white flowers; in autumn and winter.

[3]PHYLICA *Buxifolia.*

*Box-leaved Phylica.*] Hath a shrubby erect stem, branching four or five feet high; small oval, obtuse, firm, smooth, sparsed leaves, downy underneath; and the branches terminated by small heads of greenish flowers; in autumn and winter.

All these species are durable in root, stem, and branches, and retain their leaves all the year.

They being natives of Æthiopia and other parts of Africa, are somewhat tender, requiring shelter here in winter, so must always be kept in pots, and placed among the greenhouse exotics, where they will effect a very agreeable variety at all seasons, and flower annually great part of autumn and winter; but do not produce seed in England.

Their propagation is chiefly effected by cuttings and slips of the young shoots.

In spring, about March or April, take off a quantity of young cuttings, or slips of the small shoots, plant them in pots of rich earth, which plunge in a hot-bed, or in the bark-bed in the stove; giving frequent waterings, and occasional shade from the sun, they will soon emit roots, and become proper plants fit for potting off separately in autumn.

Or young cuttings or slips planted any time in summer, particularly June and July, in pots, as above, and placed under a hot-bed frame, or covered close with hand-glasses, watered and shaded, they will also grow; but will not be so forward as those of the spring-planting.

PHYSALIS, (*Alkekengi*) Winter Cherry.

This genus consists of herbaceous and shrubby ornamental plants, for the pleasure-ground, green-house, and stove, mostly of upright, branchy growth; garnished with oblong, oval, and heart-shaped leaves; and monopetalous, rotaceous flowers.

Class and order, *Pentandria Monogynia.*

*Characters.*] CALIX, is small, monophyllous, pentagonous, semi-quinquefid, swelling, and persistent. COROLLA, is monopetalous and rotated, with a very short tube, and the limb large, plicated, and quinquefid. STAMINA, five small awl-shaped filaments, having erect connivent antheræ. PISTILLUM, a roundish germen, filiforme style, and obtuse stigma. PERICARPIUM, a small roundish bilocular berry lodged in a large swoln, pentagonous, coloured calix, having many reniforme seeds.

There are about eight or ten species of this genus, consisting of hardy herbaceous perennials and annuals for adorning the pleasure-garden, and shrubby plants for the green-house and stove collections.

*Hardy Herbaceous Perennial Kinds.*

Of these kinds there are only two species for our purpose, both exotics of foreign countries, but hardy enough to live here in the open ground, one of which, *Common Winter Cherry*, hath been long a resident in our gardens.

[1]PHYSALIS *Alkekengi.*

*Alkekengi, or Common Winter Cherry.*] Hath long, creeping, perennial roots; many upright, jointed, herbaceous stems, a foot and a half high, branching at bottom; garnished with large, oblong, acute, entire leaves, by pairs from the same side of the stalk; and at the axillas, long slender pedunculi, terminated by white flowers; succeeded by round red berries, inclosed in the large inflated bladder-like calix.

[2]PHYSALIS *Viscosa.*

*Viscous Virginia Winter Cherry.*] Hath a creeping perennial root; many upright herbaceous stems, about a foot high, paniculated above; obtuse, repand, downy leaves by pairs; and at the axillas yellowish flowers; succeeded by greenish-yellow viscous berries.

Both the above species flower in June or July, and the berries ripen in autumn; those of the first sort resemble common red cherries, and exhibit a very ornamental appearance in autumn.

The berries of the first sort (*Alkakengi*) are used with success against the gravel and stone, and the heat of urine; and may be eaten raw, or boiled in milk and sweetened with sugar.

ſamic aromatic nature; the buds and leaves being remarkably fragrant, and any part of the tree being cut or broken, it will emit abundance of fine balſamic juice, or turpentine. Both the varieties aſſume a beautiful growth, and have great merit for all ornamental plantations.

The following is a variety of ſome of the Spruce kinds.

*American Hemlock Spruce Fir*—Riſes with an upright ſtem of moderate height, branching thinly, narrow obtuſe leaves, ranged two ways; and roundiſh cones.

*Cedar of Lebanon, and Larch Kinds, having Leaves in Bunches.*

There are only two ſpecies of thoſe kinds, one a celebrated ever-green tree, of great antiquity; the other a beautiful deciduous tree: both of them valuable for ornament, and for timber plantations.

11 PINUS *Cedrus.*

*Cedrus, or Cedar of Lebanon.*] Riſes with an upright trunk, obtaining conſiderable height and magnitude, branching horizontally around to a great width; cloſely garniſhed with narrow, acute, ſtiff leaves, in bunches from the ſame point; and largiſh, thick, cloſe cones.

It is a native of Mount *Libanus* in Syria; is very hardy, and proſpers here in almoſt any ſoil and ſituation.

This famous and curious tree is the loſty and ſpreading Cedar ſo greatly celebrated in ſcripture; to which many beautiful alluſions and compariſons are made; and is moſt certainly a tree of ſingular grandeur, after having arrived to ſome conſiderable growth, as it ſpreads its horizontal branches in the moſt agreeable form, very widely around; which agrees with the alluſion of the Pſalmiſt when ſaying—*She ſpreadeth her branches like the cedar-tree.* Mount Libanus ſeems to be the chief place of its natural or original reſidence; where, by accounts of travellers, there are ſtill a few old trees of prodigious magnitude remaining; but the cones having been diſperſed into many different countries, they have raiſed large plantations of the trees, and in ſome places are arrived to a conſiderable ſize; though in England there are only at preſent here and there a tree, that is of any conſiderable growth: they, however, are now raiſed abundantly in all the public nurſeries; and of late years numbers of the trees have been planted on many eſtates, for they will proſper in almoſt any ſoil and expoſure, and have great merit for all ornamental plantations; likewiſe as timber-trees: the wood of which being of ſuperior value.

There are ſaid to be ſome large trees ſtill remaining upon Mount Lebanon, whoſe trunks are thirteen yards in circumference, and the branches ſpreading forty ſpaces every way around.

It is ſaid the timber of this wonderful tree is proof againſt all putrefaction, and that it will continue ſound two thouſand years: it was greatly uſed in the building of Solomon's temple, and other ſacred ſtructures of antiquity.

12 PINUS *Larix.*—(*Deciduous.*)

*Larix, Larch-tree, or Deciduous Pine.*] Riſes with an upright, ſtraight, whitiſh ſtem, to a great height, ſending out long, ſlender, pendulous branches; long, fine, obtuſe-pointed, light-green leaves, in bunches from the ſame point, ſpreading open above; and with flowers of different colours in the varieties; ſucceeded by ſmall, cloſe, acute cones, an inch long.

It is a native of the Alps, Switzerland, and Italy, &c. which, though deciduous, is a tree of beautiful growth.

*Varieties.*] Common red Larch-tree, having reddiſh flowers and cones—white Larch-tree—black American Larch-tree—horizontal Larch-tree—dwarf Larch-tree.

All theſe twelve ſpecies of *Pinus* flower in ſpring, principally in April and May, but make very little ſhow: the flowers are univerſally monoecious, apetalous, and amentaceous, with the males collected into conic branches, and the females into cloſe cones, which gradually grow into real cones that produce the ſeeds, which will be ready for gathering in November.

All theſe twelve ſpecies are trees of the firſt magnitude and beauty; eleven of which are ever-greens, the twelfth is deciduous, and are all of hardy nature, ſo as to proſper in almoſt any ſoil and ſituation; having all great merit both to enrich our ornamental plantations, and moſt of them alſo as timber-trees; and for either purpoſe they may be employed in any expoſure in gardens, parks, or fields, or either in plains, or the ſides or tops of hills, and in woods and clumps of all ſorts; the Scotch Pine in particular is the hardieſt of all the ſorts; ſcarcely any country ſoil or ſituation comes amiſs to it, even on the tops of mountains and rocks where there is hardly any earth, and only crevices for their roots to ſtrike into; in ſhort, all the ſpecies of other *Pinus* in general poſſeſs nearly the ſame degree of hardineſs;

hardineſs; for though they may make the greateſt progreſs in deep and ſomewhat moiſt ſoils, yet they will alſo thrive tolerably both in clayey and ſandy ſoils, as well as in a gravelly, ſtony, and ſlaty ground; ſo that all the ſorts may be employed almoſt any where both for ornamental or profitable plantations: remarking, however, that the better the ſoil is, the greater progreſs they will probably make in their growth.

Therefore theſe fine trees are highly proper for plantations of all kinds, both for pleaſure and profit; and will greatly beautify and enliven the ſcene, as well as cauſe great variety among themſelves, by the difference of their leaves and cones; and as all the ſorts produce cones abundantly, furniſhed with plenty of ſeed, they may be eaſily raiſed in any quantity in the common ground. See their *Propagation*.

It is affirmed that plantations of theſe trees, beſides their being beautiful to behold when growing, and profitable as timber-trees, they render the air exceedingly wholeſome by their balſamic and aromatic exhalations, which they emit, and diffuſe widely around.

They are all very ſwift growers, as after being a few years old, they often ſhoot two or three feet in height in the courſe of one ſeaſon, moſtly performing the whole ſhoot by Midſummer; and always aſpire with one erect firm ſhoot in the middle, forming the ſtem, which at the termination of every year's ſhoot, ſends out a tier of branches circularly.

Conſidered as foreſt or timber-trees, they are of great value, as their timber is the principal wood uſed in our buildings, &c. but the principal ſorts for timber-trees are, the Scotch Pine—Pineaſter—Weymouth Pine—Swamp Pine——Stone Pine—Spruce Fir, and varieties—and Silver Fir. The timber of theſe ſorts is what we commonly call deal, and is of univerſal utility, particularly for all kinds of buildings, and innumerable other uſes: they are alſo of great value in ſhipbuilding, and are moſt excellent for maſts, in which they exceed all other trees yet known, particularly the Scotch Pine, Pineaſter, and Weymouth Pine; but the latter moſt of all, as it often grows to above a hundred feet high, with proportionable ſubſtance.

The Cedar of Lebanon and Larch-tree may alſo be employed in our plantations of timber-trees, for they will arrive to a great ſize in this country, as is evident by ſome old trees now in ſome gardens, &c.

Moſt of theſe trees are reſinous or gummy: of an agreeable aromatic ſmell, but bitter taſte.

It is from the Pine and Fir kinds that pitch, turpentine, and roſin are procured; being extracted from the growing trees, in the countries where they abound, and of which is made a very conſiderablk merchandize.

Moſt of theſe trees poſſeſs alſo very ſalutary medical properties. A decoction in milk of the ſeeds of Pineaſter, or the extremity of the young branches pulled in ſpring, is ſaid, with a proper regimen, to cure the moſt confirmed inveterate ſcurvy: the branches of the common Spruce Fir, are uſed by the Americans for making their ſpruce-beer.

All the ſpecies of theſe trees are propagated in great abundance in the public nurſeries, where they may be purchaſed in any quantity at moderate rates, or may be eaſily raiſed from ſeed, as directed under the article of their *Propagation*.

It is adviſable to plant out all theſe trees when they are young, not more than three or four feet high, or if younger the better; as they will root more freely, and make much greater progreſs.

The beſt ſeaſon for planting all theſe kinds of trees is autumn or ſpring, i. e. September, October, and November, for the autumnal planting, and February and March for the ſpring; tho' they may alſo all be removed with tolerable ſucceſs any time in open weather in winter, from September till March; but thoſe tranſplanted early in autumn will generally have taken root before winter comes on, and begin to eſtabliſh themſelves more firmly before the drought of the enſuing ſummer.

When intended to have ornamental plantations of theſe trees, they may be planted both in clumps and in continued plantations, ſometimes by themſelves, and ſome in aſſemblage with other trees of ſimilar growth, ſtationing the ever-greens principally with thoſe of that tribe; though, for the general part, they appear to the beſt advantage when diſpoſed by themſelves in various elegant clumps, and running plantations: obſerving to have a proper intermixture of the different ſorts, and allow a proper diſtance between the trees, that they may have room to ſpread their heads around diſtinctly, and be branchy quite to the bottom. Some trees of different ſorts may alſo be diſpoſed as ſingle objects, in lawns, parks, and other ſpacious openings.

But when deſigned to have any planted for timber-trees, they ſhould always be planted in continued plantations, and ſet pretty cloſe, ſo as to draw them more effectually up in height; for it is the length as well as the ſubſtance of this timber that greatly enhances its value; therefore they may be planted only four or five feet aſunder, and in ſeven years ſome of the weakeſt may be thinned out, and in two or three years after the thinning may be repeated; and ſo continue gradually thinning out the underlings, which will do for poles, ſpars, &c. and thus ſhould theſe plantations be thinned occaſionally till the principal trees deſigned for ſtanding are arrived at maturity, whereby they will aſpire to a prodigious height, with ſtems as ſtraight as an arrow.

After making any plantation of theſe trees either for pleaſure or profit, no farther trouble or expence is neceſſary, than keeping down large weeds, &c. whilſt the plantation is young, and fencing againſt cattle, for they do not require any trimming, as none of the branches ſhould by any means be lopped, which would not only ſpoil the beauty of the trees, but would retard their growth in proportion.

*Propagation and General Culture of all the Sorts.*

All the ſpecies of *Pinus* and varieties in general are propagated only by ſeed, which will grow freely in the common ground, either in beds or borders of light earth, or in pots or boxes of the like ſoil, in order for moving occaſionally to different ſituations at different ſeaſons; and the ſeaſon for ſowing all the ſorts is in March and April.

Moſt of the ſorts produce cones abundantly in our gardens and plantations, ripening in autumn and winter, containing plenty of ſeeds; obſerving to gather the cones in the proper time. All thoſe in particular that are of a looſe nature ought to be gathered early in winter, otherwiſe they are apt to open and diſſeminate their ſeeds; but thoſe that are compact and firm may hang longer, and be gathered any time about the middle or end of winter, or towards ſpring. The cones of moſt of the ſorts are alſo ſent us from the different countries where the trees abound; and are ſold at all the public nurſeries and ſeed-dealers at moderate rates; either the cones entire, or the ſeeds cleared from the cones: the method of taken out the ſeeds is as directed below.

It muſt be obſerved of getting the ſeed out of the cones, that as the cones are compoſed of numerous hard bony ſcales, very cloſely placed, having the ſeeds lodged between them; and that ſometimes the ſcales being almoſt united, eſpecially in ſome of the Pine kinds, Cedar of Lebanon, &c. and often ſo cloſely involve the ſeeds as they cannot be diſlodged without violence of breaking or ſplitting the cones open with an inſtrument; though thoſe of many of the ſorts will open readily by expoſing them before a fire, or to the Midſummer ſun, when the heat will cauſe the ſcales to open gradually, ſo as the ſeeds will eaſily ſhake out; but by waiting till ſummer for the heat of the ſun to open the cones, we loſe a year in the time of ſowing, therefore having procured a quantity of the cones in autumn or winter, they may be laid before a moderate fire, at ſome reaſonable diſtance, ſo as not to ſcorch the ſeeds: thus the ſcales will open, and the ſeeds may eaſily be beaten out of their cells; though ſome ſorts, particularly the Stone pine and Cedar of Lebanon cones are ſo cloſe and hard that the ſeeds cannot be diſlodged without violence, as above obſerved, and is generally effected either by breaking them with a vice, or by boreing a hole with an inſtrument up the middle of each cone, then having an wooden or iron peg of a proper ſize, drive it through the hole, which will ſplit and divide the cone ſo as the ſcales may be eaſily removed and the ſeeds taken out ready for ſowing.

With regard to the proper ſoil and ſituation in which to ſow theſe ſeeds, almoſt any common light ground in the nurſery will do, but give preference, where practicable, to a light ſandy loamy ſoil; and as to ſituation or expoſure it may either be any of the open quarters of the ſeminary, or in a ſomewhat ſhady border, in which they generally riſe ſtronger than in a full expoſure, unleſs the beds, &c. are ſhaded occaſionally in hot dry weather in ſunny days when the plants begin to come up.

The beſt ſeaſon for ſowing all the ſorts is March, but not later than the beginning of April.

Having, therefore, a proper quantity of ſeed ready; and the ground prepared by proper digging, and formed into one or more beds, three or four feet wide; take advantage of a dry day, and ſow the ſeeds, ſcattering them moderately thick all over the ſurface of the beds, and cover them half an inch deep with finely-broken light mould; or where

there

there are only a ſmall quantity to be raiſed, the ſeeds may be ſowed in large pots, or boxes of light ſandy loam, covering them the above depth; though this practice is more particularly neceſſary for the Cedar of Lebanon, in order to move the plants into the ſhade in ſummer, and to a ſunny warm expoſure in winter; but for the ſake of which convenience ſome ſow moſt of the ſorts in pots or boxes; and ſome, in order to forward them as much as poſſible, ſow them in pots, and plunge them in a moderate hot-bed juſt to bring up the plants. They, however, will all ſucceed tolerably in the full ground, eſpecially all the Pine, Fir, and Larch kinds; and moſt of the ſorts will come up in ſix or ſeven weeks after ſowing.

Having, however, ſowed the ſeed, the following little attendances are neceſſary in reſpect to the care of the ſeed-bed and young ſeedling plants. In the firſt place obſerve, that as theſe ſeedlings generally riſe out of the ground with the huſk of the ſeed on their tops, which being once obſerved by the birds, they will attack them from all parts, and if not prevented, will pull them up as faſt as they appear above ground; it is therefore adviſeable to defend them at this time, by ſpreading nets over the beds, &c. upon proper ſupport, to remain until the plants are all fairly come up, and have thruſt their huſks off their heads. In the next place, it will be of advantage at this time to give occaſional ſlight ſhade of mats, in hot ſunny days, to thoſe in a full expoſure. Give alſo occaſional very moderate waterings in dry weather; and keep them clear from weeds all ſummer. With the above care the ſeedlings will advance and form little ſlender plants by autumn following, though ſome probably will only be furniſhed with a few leaves at top, and juſt formed buds in the centre, ready to puſh next ſpring; others, more forward will likely have made a ſhort ſhoot by autumn: obſerving they are to remain in the ſeed-bed till a year old, they are hardy enough to ſtand the winter without any covering, except the Cedar of Lebanon, which if the weather proves ſevere, it may be proper to ſhelter occaſionally either with mats or a hot-bed frame: but all the others generally ſtand the ſevereſt froſt unhurt; and by ſpring following, all the ſorts ſhould be pricked out into nurſery-beds.

In ſpring following, therefore, the ſeedlings being one year old, they ſhould in general be pricked out from the ſeed-bed into nurſery-beds, and March or beginning of April is the proper time, obſerving to form beds for their reception four feet wide; then taking up the ſeedlings out of the ſeed-bed with all their roots as entire as poſſible, prick them in the new-prepared beds, in rows ſix inches aſunder; here let them have two years growth, when by the end of the ſecond ſummer they will have ſhot ſix inches, or more; then in ſpring after it is adviſable to tranſplant them in wider rows, alſo in the nurſery; obſerving in this ſecond removal to ſet them in rows two feet aſunder, and one at leaſt in the lines, as they are to remain here till of a proper growth for final tranſplantation; they will here ſhoot ſix or eight inches more in height the enſuing ſummer; and in another year they will puſh with much greater vigour, probably make a ſhoot of half a yard or two feet long; ſo that when about four or five years old they will be about a yard high; and if they ſtand a year or two longer they will be proportionably taller, and of full ſize for final tranſplantation.

Though it is moſt adviſable to tranſplant all theſe ſorts of trees finally when not above two or three feet high, as they generally take root ſooner, and ſet to growing more freely than trees of larger growth; for although moſt of the ſorts may be tranſplanted when ſix or eight feet high, yet trees of two feet moſt commonly make the greateſt progreſs.

However, when there is a neceſſity of retaining theſe trees longer in the nurſery, it will be of advantage to tranſplant them every two years, whereby the roots will be kept ſhorter, and throw out a great many fibres, ſo as to admit of being removed with ſafety, for without the precaution of removal, trees of ſome years ſtanding would extend their main roots to a great diſtance, and be unfurniſhed with fibres, in which caſe large trees would be very liable to fail; but in the other method, trees of ſix or eight feet ſtature are ſometimes removed with tolerable ſucceſs; though the tranſplantation of ſuch large trees of theſe kinds ſhould only be practiſed where an immediate ſhew is required in ornamental plantations.

But I ſhould adviſe, for the general part, that moſt of the ſorts, the Pine and Fir kinds in particular, have their final tranſplantation when not more than two or three feet high, as before hinted, eſpecially where any conſi-

derable plantation is intended, more particularly if deſigned as foreſt-trees. I have, indeed, aſſiſted in planting many thouſand of the Scotch Pine, and others, when little more than a foot high, on the ſides of hills and waſte grounds, without any previous preparation of the ſoil, than juſt making an aperture, or hole for each plant, and frequently only making a ſlit with the ſpade for the reception of each, leaving them to ſhift for themſelves, and ſecuring the boundaries of the ground againſt cattle: moſt of them have ſucceeded; though, in general, plants about two feet or a yard high, are an eligible ſize for any plantation.

The ſeaſon for making plantations of theſe ſorts is autumn or ſpring, or even in winter during mild weather, as already noticed.

In taking up all theſe kind of trees for any plantation, obſerve with particular care to raiſe them with all the roots as entire as poſſible: preſerve alſo their tops perfectly entire, likewiſe all their branches, and in that ſtate let them be planted; only previouſly with your knife trim any broken or very ſtraggling part of the root.

With regard to the diſtribution, or arrangement in the different plantations, and mode of planting, they are as follow—Thoſe deſigned for embelliſhing the ſhrubbery compartments, and for ornamental plantations in general, may be diſpoſed both in aſſemblage with other trees, and to form clumps, and continued plantations occaſionally of themſelves. But thoſe intended as foreſt-trees ſhould generally be diſpoſed alone in conſiderable plantations: and, as to the method of planting them, it is the ſame as for other hardy trees, ſee PLANTING: obſerving however, where large plantations in out-grounds are intended either for pleaſure or profit, there will not be any great neceſſity for a previous preparation of the ſoil, with reſpect to digging or ploughing, only juſt to dig a hole for each tree: the ſame rule may alſo be obſerved in planting clumps of them in lawns, parks, and other graſs-ground. Obſerving, that thoſe deſigned principally for ornament, ſhould be diſpoſed at ſuch diſtances as their branches may extend freely every way, for the beautiful diſplay of the head is a great merit in theſe trees in pleaſurable plantations; but thoſe intended for timber plantations, may be planted only four or five feet diſtance, in order that they may draw one another up ſtraight and tall more expeditiouſly, and to admit of a gradual thinning after a few years growth, for poles, &c. as already obſerved.

After having their final tranſplantation, they require but very little more trouble, only obſerving to clear them, while young, from overbearing weeds; and if any large trees, five or ſix feet high, or upwards, are planted, it is proper to ſupport each tree with a ſtake, to ſecure them againſt the power of tempeſtuous winds, till firmly rooted.

Let all the ſorts take their own natural growth; being careful to preſerve their tops perfectly entire, to ſhoot up as faſt as poſſible; ſuffering them alſo to branch out in their own way; for no pruning is wanted, unleſs the lowermoſt tier of branches in any particular trees ſhould be thought too low and ſtraggling, when theſe may be occaſionally trimmed, cutting cloſe to the ſtem; but prune no further, for it ſhould be very ſparingly practiſed to theſe reſinous trees, as lopping the branches contributes to retard their growth, as well as impair their beauty. Indeed in large foreſt plantations, where the trees are arrived to a large growth, it is cuſtomary to lop their lower branches gradually for faggots, according as they begin to decay, for where theſe trees ſtand cloſe, the upper branches generally kill thoſe below, ſo that the lower tiers decay gradually and ſucceſſively one tier after another; and in which caſe, theſe decaying lower branches may be lopped by degrees in winter.

When the plantations deſigned for timber-trees have had from eight to ten or twelve years growth, it may be proper to begin to thin them, obſerving the rules before laid down: thoſe thinned out will ſerve for many ſmaller purpoſes, being careful in thinning to leave a ſufficiency of the fineſt plants ſtanding at proper diſtances, to grow up for timber.

PISTACIA, Piſtachia-nut, or Turpentine-tree.

This genus conſiſts of the tree and ſhrub-kind, furniſhing hardy deciduous trees for the ſhrubbery, and ever-green ſhrubs for the green-houſe, all of them of upright growth, riſing twenty or thirty feet high, garniſhed with pinnated and trifoliate leaves, and dioecious, amentaceous, apetalous flowers, ſucceeded by drupaceous berries, furniſhed with oval nuts; which in ſome ſpecies are eatable.

Claſs

Claſs and Order, *Dioecia Tetrandria.*

*Characters.*] CALIX, male and female flowers on diſtinct trees, the males collected into looſe, ſparſed amentums, compoſed of ſmall ſcales, each having one floret, furniſhed with a very ſmall, five-parted perianthium; and the females in cluſters, with ſmall trifid cups. COROLLA, ſmall florets without petals. STAMINA, four very ſmall filaments, having large, oval, tetragonous, erect, petalous antheræ. PISTILLUM, an oval germen, three reflexed ſtyles, with thick hiſpid ſtigmas. PERICARPIUM, an oval berry-like drupe, having an oval ſmooth nut.

There are five ſpecies, four of which are hardy ſhrubs, moſtly deciduous; the other is a tender ever-green for the green-houſe.

*Hardy Kinds.*

Theſe kinds, however, though denominated hardy, are rather tender whilſt young, at leaſt thoſe raiſed from ſeed, requiring ſhelter of a green-houſe or garden-frame, in winter, till four or five years old, and are become a little woody.

[1]PISTACIA *Vera.*

*True Piſtachia-tree.*] Riſes with an upright ſtem, branching twenty or thirty feet high, covered with a ruſſety cracked bark, but the younger branches ſmooth; large pinnated leaves, of two or three pair of oval recurved lobes, terminated by an odd one; and from the ſides of the branches ſmall greeniſh flowers in amentums and bunches, ſucceeded in the female trees by cluſters of oval fruit, containing large eatable nuts.

It is a native of Perſia, Arabia, and Syria, from whence the nuts are brought annually, for they rarely ripen here in our gardens, and are ſold in the ſhops by the name of Piſtachia-nuts.

PISTACIA *Terebinthus.*

*Terebinthus, or Turpentine-tree.*] Riſes with an upright branchy ſtem, about thirty feet high, having a dark bark full of cracks; pinnated, dark-green, alternate leaves, of three or four pair of oval-ſpear-ſhaped lobes, terminated by an odd one; and ſmall greeniſh flowers.

It grows naturally in Italy and Spain, and from its trunk flows the true Turpentine, but that of ſome of our Pine-trees is commonly ſubſtituted.

[3]PISTACIA *Trifolia.*

*Trifoliate Piſtachia-tree.*] Riſes with an upright branchy ſtem, between twenty and thirty feet high, having a rough brown bark; trifoliate or three-lobed, dark-green leaves; and ſmall greeniſh flowers.

[4]PISTACIA *Narbonnenſis.*

*Narbonne Turpentine-tree.*] Riſes with an upright branchy ſtem, about twenty feet high, having a whitiſh bark; pinnated leaves, moſtly of three or five roundiſh lobes; and ſmall greeniſh flowers.

The firſt ſort is the hardieſt of all the above four ſpecies, and the third and fourth are the tendereſt, and are often kept here in the green-houſe collections, alſo ſometimes the common Turpentine-tree; but they may all be gradually hardened to bear the full air the year round.

*Green-houſe Kinds.*

[5]PISTACIA *Lentiſcus.*

*Lentiſcus, or Maſtick-tree.*] Riſes with an upright branchy ſtem, fifteen or twenty feet high, having a greyiſh bark; abruptly pinnated leaves, of three or four pair of ſpear-ſhaped lobes, not terminated by an odd one; and ſmall greeniſh flowers.

From this ſpecies and variety is collected the Maſtick of the ſhops.

*Variety.*] Narrow-leaved Lentiſcus.

All the above five ſpecies of *Piſtacia* flower generally in April; they are univerſally dioecious, or male and female upon ſeparate trees; are ſmall and without petals, with the males collected into amentums, and the females in bunches, moſtly of a greeniſh colour, ſo make no ſhow; and thoſe of the females are ſucceeded by cluſters of fruit, ripening to a blue or blackiſh colour, incloſing the nuts, but theſe never ripen in England.

With reſpect to the merit of thoſe trees in our gardens, obſerve as follows:

The firſt four ſpecies are proper to increaſe the collection in curious ſhrubberies, obſerving as they are of ſomewhat tender quality, ſhould have occaſional ſhelter from froſt whilſt young, ſo ſhould be kept in pots till three or four years old, ſo as they have obtained a little ſtrength, and become woody, they may be turned out into the open ground, in a dry warm ſituation; and may alſo retain ſome in pots, to have occaſional ſhelter among the green-houſe plants in ſevere winters, more particularly the *Trifoliate* and *Narbonne* kinds; which two ſorts, if ſheltered in winter, will often retain their leaves great part of the year; and being more tender than the firſt and ſecond, they are in many gardens retained as green-houſe plants. All theſe four ſorts, however

however denominated hardy, may be gradually hardened to bear the full air the year round, as aforeſaid.

The fifth ſort, *Lentiſcus*, is a pretty evergreen, of a tenderer nature than the other four, ſo muſt have ſhelter, all winter, of a green-houſe; in which collection it highly merits culture, as it effects a diſtinguiſhable variety at all ſeaſons of the year.

*Their Propagation, &c.*

The propagation of all the five ſpecies is principally by ſeed; and ſome ſorts alſo by layers.

By Seed.—The nuts are the ſeed, which of all the ſorts are procured from abroad annually, and may be obtained at moſt of the nurſeries, &c. obſerving they all require the aid of a hot-bed. Let them be ſowed early in ſpring, in pots of light earth, half an inch deep, and plunge the pots in a hot bed, juſt to bring up the plants: when this is effected, be careful to admit a large portion of freſh air daily and by degrees harden them to it fully in June, giving frequent refreſhments of water all the ſummer; and in autumn remove the pots to the ſhelter of a hot-bed frame, or a green-houſe, to remain all winter; then in ſpring following plant them out into ſeparate ſmall pots, which if directly plunged in a moderate hot-bed it will greatly facilitate their rooting, and ſet them forward; but when they begin to ſhoot, harden them to the full air, ſtill continuing a proper ſupply of watering; and in autumn remove them again to a frame or green houſe, for the winter; which care muſt be repeated to all the ſorts till they are three or four years old, as aforeſaid; ſhifting them occaſionally into larger pots. After this, moſt of the four hardy kinds may be turned out into the ſhrubbery compartments to remain; but the *Lentiſcus* muſt ſtill be continued in pots to have ſhelter in winter with other green-houſe exotics.

By Layers.——Moſt of the ſorts may be tried by this method; but the *Lentiſcus*, in particular, is very commonly propagated by layers. Chuſe the moſt conveniently ſituated young ſhoots, which lay in ſpring by common laying, and they will be moſtly well rooted by the following autumn; when they ſhould be taken up and potted ſeparately, and managed as the ſeedlings.

PISTILLUM, the Piſtil, or Pointal of the flower, or female organ of the generation of plants, riſing in the centre of the flower like a column, conſiſting of the germen, ſtyle, and ſtigma.

1. The *Germen* forms the baſe of the *Piſtillum*, and is the ſeed-bud, or rudiments of the ſeed-veſſel, or fruit, and ſupports the ſtyle, elevated like a pillar in the middle of the flower. See GERMEN.

2. The Style (*Stylus*) ſtands upon the ſummit of the germen, elevated like a column, and correſponds to the *vagina* in animals, being generally ſomewhat hollow like a tube, tho' the tubular parts are often ſo fine as to be ſcarcely perceptible, ſerving to tranſmit the effluvia of the ſecundating duſt, or *Pollen*, through into the heart of the germen, or ſeed-bud, for the purpoſe of impregnating the ſeeds, and is terminated by the ſtigma. See STYLUS.

3. The Stigma is the ſummit or head of the ſtyle, appearing frequently like a knob or head, and when there is no ſtyle, it adheres to the ſummit of the germen; and its uſe is to receive the male-duſt from the antheræ; thence tranſmiting its vapour through the *vagina*, or ſtyle, aforeſaid, into the heart of the ſeed-bud, for the purpoſe of impregnation. See STIGMA.

Each of the above parts of the *Piſtillum* is more particularly explained under its reſpective head.

PISUM, the Pea.

This genus conſiſts wholly of hardy herbaceous plants, one ſpecies of which, the *common Pea*, an annual, is the parent of all the numerous varieties of Peas cultivated in our gardens and fields for common uſe, the merits of which, as eſculents, are univerſally known; all of which riſe with long, ſlender, cirrhoſe-climbing ſtalks; garniſhed with cirrhoſe-pinnated leaves, and papilionaceous flowers; ſucceeded by that ſort of ſeed-veſſel called a legumen, or pod, filled with Peas, the eatable part of the plant.

Claſs and Order, *Diadelphia Decandria.*

*Characters.*] CALIX, is monophyllous, acutely five-parted and permanent. COROLLA, is papilionaceous, conſiſting of a broad heart-ſhaped, reflexed, indented ſtandard, ending with a point; two ſhort, roundiſh, connivent wings, and a ſhorter, compreſſed, ſemi-lunulated keel. STAMINA, ten diadelphous filaments, crowned by a roundiſh antheræ. PISTILLUM, an oblong compreſſed germen, a triangular, riſing, membranaceous ſtyle, and oblong hairy ſtigma. PERICARPIUM, a large, long, bivalvular pod, ending

in a point, containing one row of roundiſh ſeeds or Peas.

The principal diſtinction between this genus and *Lathyrus*, (Everlaſting Pea, &c.) is, the ſtyle of this is triangular, and that of the Lathyrus is plane. See LATHYRUS.

There are four ſpecies of this genus; two only of which have merit for our purpoſe; though there is only one ſpecies conſidered as an eſculent for general culture, which is the *Common Cultivated Pea*, compriſing, however, numerous varieties; for all the ſorts of garden and field Peas are varieties only of one ſpecies; but whether the common white Pea of our gardens, or the grey field Pea be the original kind, is uncertain. The other ſpecies alluded to is conſidered principally as a flowery plant belonging to the tribe of hardy annuals.

*Cultivated Kinds.*

PISUM *Sativum.*

*Common Cultivated Pea.*] Riſes with long, ſlender, trailing ſtalks, by claſpers upon ſupport, from two to ſix or eight feet high; pinnated, cirrhoſe leaves, of about three pair of lobes, terminated by cirrhi, or tendrils, and have taper foot-ſtalks, with roundiſh, indented ſtipula below; and at the axillas long pedunculi ſupporting many flowers, &c.

*Varieties.*] Common white Pea—common grey field Pea; each of which compriſing many varieties.

Each of theſe two principal varieties of this ſpecies, *Piſum Sativum*, compriſe numerous others, particularly the white ſort; and new ones are obtained almoſt every year, in one place or other, differing from one another in ſome little particular, either in their growth, manner, and time of bloſſoming and bearing, ſize and form of the pods and peas, together with their quality for eating; and ſeveral other little properties or ſingularities, all of which are accidental varieties, riſing from one another; for ſuppoſe we were to cultivate only any one of the varieties, we by obſervation will find plants varying from the original ſort, ſometimes probably for the better, and ſometimes worſe; but the firſt only is to be regarded; and it is by obſerving this, that curious perſons have encreaſed the valuable varieties, when by examining their crops, find one plant very different from all the reſt, or any other known ſort, either by its bloſſoming and bearing earlier, or ſome other valuable ſingularity, carefully mark it, and preſerve all its produce for ſeed; which being ſowed ſeparately for two or three years, or till having multiplied them ſufficiently to be diſtributed, they are ſent into the world as a new ſort, bearing the name probably of the place, or perſon who firſt obtained them, ſuch as the Charlton Pea, &c. Thus the different varieties of Peas are obtained, and each reſpective variety multiplied for public ſupply: ſome of which varieties differ very materially from one another, either by their early bearing, or by their larger growth, or the like, though ſome reputed varieties differ ſo immaterially that the difference is hardly diſtinguiſhable. And it is to be remarked of all theſe acquired varieties, that although ſome are tolerably permanent, yet without proper care in ſaving the ſeed of each ſort ſeparate, they will all gradually degenerate to one another, or to the common white, or grey kind; ſo that it would in a manner be impoſſible to pretend to ennumerate all the varieties of Peas, or to give any particular deſcription of the different ſorts; therefore we ſhall only exhibit a liſt of the principal varieties that are at preſent the moſt commonly known; which, though pretty many, there are not above five or ſix that have merit for general culture; ſome of which are moderate growers, and early bearers, commonly called Hotſpurs; others are large growers, and come later into bearing.

*Hotſpurs, or ſmaller forward Kinds.*] Early Charlton hotſpur Pea—early golden hotſpur, an improved variety of the Charlton kind—Nicholas earlieſt hotſpur, an improvement of the golden ſort—Maſters hotſpur Pea—Reading long hotſpur Pea—dwarf hotſpur Pea: with ſeveral other reputed varieties of leſs note, that hardly differ in any thing from the above ſorts.

All the above are moderate growers, riſing upon ſticks only, three or four feet high: and the dwarf Pea ſcarcely half ſo much: they are all excellent bearers, producing moderate ſized well filled pods; but the firſt four ſorts differ very little from one another, only in ſome bearing a little earlier than others: the golden kinds are the preſent earlieſt bearers, and in the moſt eſteem for the forward crops, though any of the hotſpur ſorts are proper both for the early and firſt general crops, or in ſhort, for the principal crops during the whole pea-ſeaſon, for they are rather ſweeter eating Peas than the larger kinds: the Reading hotſpurs in particular have great merit to make

make a principal ſhare in the general crops, they being remarkable bearers, and produce fine long pods; and the dwarf Pea is particularly valuable for early crops in frames, &c. or a few may be ſowed occaſionally in the open ground both for early and later crops, for it is a remarkable bearer for its ſize; but not proper, however, for any general crop. By different ſowings of the hotſpur kinds from October or November until ſpring, they will furniſh a daily ſupply of peas from May until Auguſt, or till ſucceeded by the following larger kinds.

*Larger-growing late Kinds*] Large marrowfat Pea—dwarf marrowfat Pea——large ſugar Pea, having very large bowed pods—dwarf ſugar Pea—Spaniſh Moratto Pea——green nonpareil Pea—rouncival Pea—green rouncival Pea—white rouncival Pea.

Theſe large kinds moſtly aſſume a ſtrong growth, and will riſe upon ſupport five or ſix, or even ſeven or eight feet high, and produce fine large pods in tolerable plenty; the Marrowfats and Spaniſh Morattos in particular bear abundantly, and are profitable both for family uſe and market; but the Marrowfats are moſt eſteemed for the main crops. Obſerving, all theſe large kinds are proper to ſow chiefly in ſpring, from January and February until May, to ſupply the table in July and Auguſt; and by ſowing late in May and in June, a ſucceſſion may be continued from the beginning of July until near Michaelmas.

*Other Varieties of leſs Note*] Crown or roſe Pea, riſing with very thick ſtalks, bearing its bloſſom and pods at top, in a large umbellate cluſter, valued more for curioſity than profit—painted lady crown Pea—ſickle podded Pea—egg Pea—cluſter Pea——large grey Pea——crooked grey Pea: with ſome others of leſs note.

Great as the above number of varieties of Peas are, they are all the offſpring of one ſpecies, that have ariſen at different times by chance, and been encreaſed by good culture.

The following ſpecies is chiefly valued as a flowery plant.

²PISUM *Ochrus.*

*Ochrus, or Winged Pea.*] Hath angular ſtalks growing about a yard long; diphillous or two-lobed leaves, having membranaceous, decurrent, winged foot-ſtalks; and pedunculi ſuſtaining one yellow flower; ſucceeded by oblong pods, containing roundiſh compreſſed Peas.

Both the above ſpecies of *Piſum*, together with all the numerous varieties of the common Pea, are herbaceous annuals; riſing from ſeed in winter and ſpring, flower and yield their produce in ſummer, and totally periſh in autumn following; ſo that a freſh ſupply muſt be raiſed annually from ſeed; and that to have a regular ſupply of the varieties of the common Pea for uſe from the earlieſt part of ſummer until Michaelmas, ſeveral different ſowings from October or November until May or June are neceſſary; for a crop of Peas continues but about a fortnight in full bearing; but by a repetition of ſowings once in three weeks or a month during the above period, a conſtant ſucceſſion is continued five or ſix months.

### *General Obſervations.*

All the ſorts are hardy, and thrive in the open ground in almoſt any common ſoil of a garden and field: obſerving the early ſowings ſhould generally be in a warm dry ſituation, and the general and later crops in any open expoſure.

They are all of trailing growth, though of the cirrhoſe climbing kind, for being furniſhed with *cirrhi*, or tendrils at the ends of their leaves, that catch hold of any neighbouring buſhes or ſticks, they thereby climb and ſupport themſelves erect, and mount ſeveral feet high; which indicates that though they are procumbent or trailing plants, yet by being furniſhed with claſpers, nature ſeems to have deſigned that the generality of them ſhould climb and raiſe themſelves from the earth: therefore in their culture it will be found advantageous to allow them ſupport of ſticks, which may be practicable enough for moderate quantities, in places where loppings of trees, &c. can be obtained in plenty; and as the Peas are cultivated in rows, by placing a range of ſuch ſticks along each row, the plants will readily catch hold and aſcend to their tops, and bloſſom as they advance in height; and both bloſſoms and pods will be conſiderably more abundant, and continue longer than thoſe that are ſuffered to trail on the ground.

They are cultivated always in rows, by ſowing them in drills, from two to four feet aſunder; that being not only the moſt commodious method of ſowing, but alſo for the

the nature of growth of the plants, as well as for admitting to do the neceſſary work, and to gather the produce. See the *Propagation*, &c.

Peas are a moſt uſeful and profitable eſculent, valuable both to ſupply our tables with their produce, young and green, all the ſummer, and alſo to be dried when ripe, and preſerved for winter, when they are moſt excellent for many purpoſes, as for Peas-ſoup, Peas-pudding, &c.

The general ſeaſon of green Peas for uſe is principally June, July, and Auguſt, by ſowings from December or January until May; but by ſowings ſo early as October and November, and continuing a monthly repetition of ſowings, as before hinted, we often have Peas daily from the beginning of May to the end of September.

The principal ſorts of Peas that merit eſteem for general culture, are the early Charlton, Golden, and Reading Hotſpurs; the Marrowfats, Spaniſh Morattos, and Rouncivals; all of which are great bearers, and exceeding fine eating Peas; but where there is large ſcope of ground, curious perſons may raiſe as many of the ſorts as may be convenient: I, however, have obſerved, that three or four different ſorts were always fully ſufficient for the general crops; with which the table have been as plentifully ſupplied during the whole ſeaſon of Peas, as if all the varieties had been raiſed, and with much leſs trouble.

Of the ſmaller kinds, I ſhould adviſe the Charlton or Golden Pea, both for the early crops, and for the firſt general crops, by different ſowings, at a month or three weeks interval, from October or November until ſpring, to ſupply the table with green Peas from May until July or Auguſt; but indeed all the Hotſpur kinds are excellent for general culture almoſt the whole ſeaſon of Peas, but are peculiarly adapted for the early or forward crops, becauſe they come into bearing ſooner than the larger kinds by a fortnight, if both ſorts are ſowed on the ſame day. The earlieſt Golden Hotſpurs are the beſt to begin with for the earlieſt crops, repeating two or three ſowings at intervals, as above ſuggeſted; afterwards may be ſown any of the other Hotſpur kinds, particularly a good ſhare of the Reading or long Hotſpurs for the general crop, as being moſt excellent bearers, producing fine long pods: remarking, that the Hotſpur kinds in general may be ſowed any time from October until April or May, at intervals of a month, three weeks, and fortnight; that is, the ſowings from October until Chriſtmas, once a month or three weeks will be often enough; and from Chriſtmas until the beginning of March once a fortnight or three weeks; and from March till May repeat the ſowings once a fortnight at leaſt: by which intervals of ſowing you will have a plentiful daily ſupply all ſummer long; each crop continuing in bearing but a fortnight or three weeks, ſo the different ſowings regularly ſucceed one another.

I have, of the early crops of Hotſpurs that come into bearing ſoon in May, let the gleanings ſtand for ſeed, which ripening early in June, have ſowed them directly, and gathered a crop of peas from them the ſame year in Auguſt and September.

And of the large kinds, I ſhould prefer principally the Marrowfats, Spaniſh Morattos, and Rouncivals; to be ſowed in ſpring, &c. for the general later crops, i. e. to bear in July, Auguſt, and September; but would give preference to the Marrowfats, particularly the dwarf kinds: for the chief crops, next to theſe, the Spaniſh Morattos, then the Rouncivals; the latter of which, though they may be ſowed at any time in common with the two former, yet I would alſo adviſe to uſe theſe ſorts principally for the late crops, as they generally endure the drought of ſummer the beſt; but any of theſe large kinds that are moſt approved, may be ſowed any time from January or February until the end of May, or beginning of June; and where variety is in requeſt, ſome of each ſort may be ſowed, but moſt of all of the Marrowfats, beginning with the dwarf kinds firſt, which indeed is rather preferable for continuance than the large Marrowfats, as this ſort requires very great room to grow, and unleſs they have very tall ſticks to run upon to their full length, do not ſucceed well; but with this aſſiſtance, however, it bears wonderfully; ſo that where there is every convenience, it is proper to ſow both theſe ſorts; and to have a regular ſucceſſion of any or all theſe large ſorts of Peas, continue ſowing a few every fortnight, or three weeks from January or February until the end of May or beginning of June, as above obſerved, though in April and May the ſowings ſhould be every fortnight at leaſt; and I would adviſe the late ſowings to be chiefly of the Rouncival kinds: thus by repeated ſowings you will have a plentiful daily ſupply of theſe large Peas from the beginning of July until the end of September, even

ſometimes, in favourable ſeaſons, until October.

As to the mode of culture, Peas in general ſhould be cultivated in rows, as we obſerved before, by ſowing the ſeed in drills drawn with a hoe, from one to two inches deep, allowing abundance of room between the ſeveral lines or ranges, for the free admiſſion of ſun and air, as well as for performing the neceſſary culture, and room to go between to gather the produce without breaking down the plants. Allow therefore the ſmaller kinds not leſs than two feet or two and a half, between the rows, but if intended to give them ſticks to run upon, allow three feet at leaſt, or rather three and a half between the lines in rich ground; and the larger kinds ſhould be allowed a yard between the rows even when no ſticks are intended; but if deſigned to ſtick them, four feet is requiſite, or four and a half for the largeſt ſorts, ſuch as the large Marrowfats and Rouncival kinds. For it is moſt neceſſary, where practicable, to allow all the ſorts ſticks: placing a range of any ſort of tall branchy ſticks, or bruſh wood, along each row of plants, when about half a foot high, for them to climb upon for ſupport, whereby they will produce double the quantity of Peas, as when ſuffered to trail on the ground. This, however, though not very practicable where large quantities are raiſed in fields for the ſupply of market; yet for moderate quantities in private gardens, where ſticks can be readily obtained, it ſhould never be omitted, as the advantage will be more than double.

Obſerve always to allow more room by a foot, between the rows for thoſe crops that you deſign ſhall have ſupport of ſticks, than thoſe that are not; for Peas that have ſupport always grow ſtrongeſt, and if they have not proper room, the plants of the different lines will interfere, and both interrupt the growth of each other, exclude the neceſſary influence of the ſun and air, and not admit of room to gather the Peas without breaking the plants to the great diminution of the crops; but give them proper room and ſupport, and you will reap the advantage in proportion.

But when intended to allow Peas ſupport of ſticks, I have often ſowed them in double rows, with very wide intervals between, that is, beginning at one end of the ground, ſow two rows together, only a foot aſunder; then, if for the Hotſpur kinds, leave a ſpace of four feet, or if the large kinds, five feet, and ſow two more rows a foot apart; then allow another wide ſpace, and ſow other two cloſe rows, &c. and ſo proceed throughout: by this practice you have the ground equally filled as if the rows were ſingle and cloſer; and by the abundant room in the wide ſpaces, it admits all the advantage of ſun, air, and of gathering the produce freely without incommoding the plants.

Seed Peas of all the ſorts are ſold at all the ſhops and nurſeries at moderate rates, commonly by meaſure, as by the buſhel, peck, &c. or in ſmaller quantities for private gardens, by the quart or pint.

*Their Propagation and General Mode of Culture.*

As to propagation, all the ſorts are raiſed from ſeed, i. e. the Peas ſowed annually, the plants, being but of one ſeaſon's duration, an annual repetition of ſowing is conſequently neceſſary; and as thoſe of one ſowing continue but a ſhort time in bearing, ſeveral ſowings are requiſite each ſeaſon, to continue the ſucceſſion for the table all ſummer; each ſowing to remain where ſowed, chuſing a warm border, &c. for the earlieſt crops, and for the ſucceeding ones, any of the common open quarters are the moſt eligible, in a free expoſure, diſtant from ſhade of trees, &c. and open to the free air and ſun; fixing on the drieſt warm ſoil for the forwarder crops, any common ſoil for the main crops, and the moiſteſt parts for the late crops.

The general ſeaſon for ſowing is any time in open weather, from October until May or June; but remarking, that during the above period ſeveral different ſowings are neceſſary, in order to keep up a conſtant ſucceſſion of young Peas for gathering ſeveral months in ſummer, i. e. from May until September; for thoſe ſown in October or November, if they ſurvive the winter, come into bearing in May and June, and by repeated ſowings at a month, three weeks, and a fortnight's interval till May, as we before remarked, they will furniſh a conſtant ſupply of Peas all the ſummer; and thoſe ſowed late in May and in June often continue a moderate ſupply in autumn till the end of September, and ſometimes a few in October. With regard, however, to the earlieſt ſowings, from October till the beginning of January, they are liable to accidents from the ſeverity of the weather, and if they all ſtand the winter, thoſe ſowed in October will ſcarcely be a fortnight earlier

in bearing than thoſe ſowed ſix weeks or two months after: it is nevertheleſs proper to begin early, and repeat the ſowings at the intervals before mentioned, that there may be a ſufficiency for ſubſtitutes in caſe of accidents; and alſo if they all ſurvive, that there may be a regular ſucceſſion of crops coming into bearing, to afford a daily gathering through the whole ſeaſon.

But, in order to have green Peas as early as poſſible, recourſe is had to the aſſiſtance of hot-beds, by the aid of which young Peas are obtained in March and April, and continued till the coming in of the natural ground crops in May or June.

We, however, will firſt proceed with the culture of the ſeveral principal crops in the natural way; then by hot-beds.

*Hotſpur Kinds for the early and firſt general Crops.*—In October, November, or December, as may be convenient, begin to ſow the earlieſt crops; though in warm gardens it is always adviſeable to ſow a few in the two former months; but in open grounds November and December is time enough to begin, chuſing the earlieſt Charlton or Golden Hotſpurs; and for their reception prepare a warm ſouth border, or ſome other dry ſheltered ſunny ſituation; and in a dry day draw drills by line, ranging ſouth and north, to enjoy the greater advantage of the ſun's influence, making the drills an inch and a half deep, and two feet and a half at leaſt aſunder; but if deſigned to allow them ſticks, three feet and a half will be the more eligible diſtance, as we before obſerved: then having the ſeed, or Peas, ſcatter them evenly along the middle of each drill, rather ſomewhat thickiſh at theſe early ſowings in winter, becauſe they are liable to accidents from the inſults of vermin, and the inclemency of the ſeaſon; covering them in evenly with the earth, either with a rake or hoe, or with the feet; being careful that they are all equally covered the depth of the drills; and then with a rake lightly trim the ſurface ſmooth, which finiſhes the work of ſowing. The ſeeds will begin to germinate in a fortnight, if mild weather, and will come up in three weeks or a month, ſeldom in leſs time at this ſeaſon; when the plants are to be managed as hereafter directed.

Having thus performed the firſt ſowing of the Hotſpur kinds, then, agreeable to the aforementioned rules, another ſowing ſhould be performed in three weeks or a month after; but if you ſowed in October or early in November, it is adviſeable to repeat the ſowing in a fortnight or three weeks, for fear the firſt ſhould fail; and after this continue ſowing once in three weeks or a month all winter in mild weather, the ſame kinds, not forgetting towards ſpring to ſow a principal crop of the Reading Hotſpurs; obſerving as the ſeaſon advances the ſowings may be in more open expoſures, and more in quantity than the early ſowings; and as the ſpring draws on, the ſowings ſhould be repeated oftener; as for inſtance, from about Chriſtmas till the beginning of March it ſhould be once in three weeks at leaſt; and from that time till May, once a fortnight will be neceſſary, though as the warm weather increaſes, a ſmall ſowing may be neceſſary every ten or twelve days. It muſt be obſerved, however, theſe frequent ſowings are principally to be underſtood for practice in private gardens, for the ſupply of ſuch families that require a daily ſucceſſion of young Peas during the whole ſeaſon; but for large quantities in fields, where only a ſucceſſion of general crops are required juſt during the principal Pea ſeaſon, June, July, and Auguſt; three or four different ſowings from November or December until March or April may be ſufficient.

All the different ſowing will come up regularly in ſucceſſive order; but the winter and ſpring ſowings differ materially in the time they require to germinate and come up; thoſe ſowed any time in winter are ſometimes three weeks, or near a month before they come up; but thoſe ſowed towards ſpring come up ſooner; and March and April ſowings will often riſe in leſs than a fortnight, eſpecially thoſe ſowed in April, and ſometimes ſowings performed in April and May will will come up in a week.

As to the culture of all theſe ſorts after they come up, it is very eaſy; obſerve as follows.

According as the plants of each ſowing come up, and have advanced two or three inches high, it is proper to begin the firſt culture by drawing a little earth with a hoe up to their ſhanks on each ſide of every row, to ſtrengthen them and forward their growth; at the ſame time cutting down all weeds: repeating the earthing, &c. once or twice at about a fortnight's interval, or a little more or leſs as occaſion may require; and when the plants are ſix or eight inches high, thoſe you deſign for ſticks ſhould then be ſticked.

But as the earlieſt crops that come up in November or December, are often in danger from the ſeverity of froſts; it is, therefore, proper, when the plants are about an inch, or an inch and a half high, to draw a little fine earth lightly up to their ſhanks, in a dry day: likewiſe it will be of much advantage to give occaſional protection to the earlieſt plants in ſevere weather, by covering them lightly with long, light, dry litter, of the ſtraw kind, or with mats; which in private gardens, where there is a moderate quantity, in warm borders, might be eaſily effected: this need only be practiſed in very rigorous froſts, but be ſure to uncover them every fine ſunny day, and the moment the froſt breaks diſcontinue the covering entirely; for they muſt by no means be kept too cloſe, which would draw them up weak and tender; but by a judicious protection, the crop is often preſerved in tolerable condition, and forwarded much ſooner to bearing than if it had been left entirely expoſed; obſerve alſo, that according as the the plants advance, repeat the earthing up their ſhanks a little at a time in dry mild weather, at leaſt two or three times till ſpring; it will protect them the better from froſt, ſtrengthen, and forward their growth: this is all they require during winter. In ſpring hoe up all weeds, and give them a final earthing, an inch or two up their ſhanks; and then, if intended to allow them ſticks, let it be done when the plants are ſix or eight inches high: having branchy ſticks of three or four feet length, ſtick a range of them along by each row of Peas, on the ſoutherly ſide of each row; the plants will readily catch hold, and gradually aſcend by their tendrils, bloſſoming as they advance; if, when in bloſſom, the weather ſhould prove dry, ſome good waterings in a morning will be beneficial culture; and when the bloſſoming plants are advanced ſome conſiderable height, if they are then topped, it will promote the pods ſetting more expeditiouſly, and arriving ſooner to perfection.

As to the other ſucceeding crops of the Hotſpur kinds, all they require is hoeing up the earth to their ſhanks, and cut up all weeds when they appear; and thoſe deſigned for ſticks, ſhould always be ſticked as ſoon as they are half a foot high, or a little more, before the plants begin to fall down to one ſide; providing ſticks for this purpoſe, about four or five feet long, and place one range to each row of Peas; placing them principally on the ſouth ſide of the rows, becauſe the plants naturally incline towards the ſun, and thereby more readily attach themſelves to the ſticks.

*Larger Kinds for the later general Crops.*—With reſpect to the larger kinds, ſuch as the Marrowfats, Spaniſh Morattos, &c. we may begin ſowing in January, if they are in great requeſt, the dwarf Marrowfats firſt; though February, March, and April is the moſt eligible ſeaſon for ſowing the general crops of all the large kinds; obſerving to chuſe a free expoſure in the moſt open quarters, there drawing drills by line, about an inch and a half or two inches deep, and not leſs than a yard aſunder; but if to be ſticked, four feet, and for the largeſt ſorts four feet and a half: ſow the ſeed thinly along the middle of each drill, and draw the earth evenly over them with the rake, hoe, or feet, covering them equally the depth of the drills, and rake the ſurface ſmooth. Repeat the ſowings once a fortnight or three weeks; though as the ſpring and the warm ſeaſon advance, once a fortnight will be proper, eſpecially from the beginning of April until the end of May; or in May and June may ſow a few once in ten or twelve days: late ſowings, however, performed from the middle of May till about the middle of June are ſeldom very fruitful, being often attacked with the mildew; but in family gardens it is proper to endeavour to have ſome as long in the ſeaſon as poſſible.

When the different crops of theſe are come up about three inches high, hoe up earth to them on each ſide of the row; and cut down all weeds, repeating the hoeing occaſionally according as the growth of weeds ſhall require; and when they are half a foot, or eight or ten inches high, thoſe you intend ſticking ſhould have the ſticks placed to them: obſerving, theſe large ſorts require ſticks ſix or ſeven feet high at leaſt, placing them on the ſunny ſide of the rows, as we ſaid for the Hotſpurs.

*Late Crops.*—Any of the ſorts, either Hotſpurs or larger kinds, that are moſt approved of, may be continued ſowing all May and until towards the middle of June, chuſing the ſtrongeſt moiſt ground; but I would, however, obſerve, that for theſe late crops, the larger kinds of peas are the moſt to be depended on; and for the lateſt crops of all, ſow chiefly the Rouncivals, they being rather the hardieſt to ſtruggle with the ſummer's drought; but Peas of any ſort that are ſowed after May is out, are rarely very ſucceſsful, they being generally attacked by the mildew, &c. it is, however, worth the trial, and if they

they bear but a few after the general ſeaſon, they will be a rarity; and in ſowing the later crops in May and June, if the weather ſhould prove dry and hot, it will be of importance to ſoak the Peas in ſoft water ſix or eight hours previous to ſowing, otherwiſe water the drills well; either of which will promote their riſing very expeditiouſly and more regularly together.

*Other general Remarks relative to all the Sorts.*

I have obſerved in performing the different ſowings of Peas, with reſpect to the intervals of time between the ſowings, it was a good rule, that as ſoon as one crop appeared fairly above ground, to ſow another to ſucceed it, whether in winter, ſpring, or ſummer; ſo continuing it to every crop, which will be found an infallible rule in ſowing, ſo as to have a regular ſucceſſion of crops following one another in bearing.

If a crop of Marrowfats, &c. and another of Hotſpurs are ſowed on the ſame day, the Hotſpurs will come into bearing a fortnight the ſooneſt, and the Marrowfats will arrive to a bearing ſtate about the time the others are going out, juſt in due time to ſucceed them: mark this, therefore, when intended to have theſe ſorts form a regular ſucceſſion to each other.

Such crops of Peas that you deſign to indulge with ſticks for ſupport, ſhould always have the ſticks placed when the plants are from about ſix to eight or ten inches high, whilſt they maintain their upright poſition of growth; and as at that height they begin to emit tendrils, they will very readily attach themſelves to the ſticks.

With regard to the ſticks proper for ſticking Peas, it is incumbent on us to procure ſuch that are branchy, or furniſhed with many ſide ſhoots, and of proper length, according to the ſorts of Peas they are intended to ſupport; they may be either the loppings of trees, or any buſhy underwood that is well feathered with ſmall lateral branches the whole length, for the plants to run upon; obſerving, that if for the Hotſpur Peas, to prepare them about four or five feet long; but for the large kinds, ſix or ſeven feet length will be requiſite, or more for the largeſt Marrowfats, &c. ſtriming them all ſomewhat fan-faſhion, ſo as the branches may ſpread only two ways, to range the way of the rows of the plants, and ſharpen the lower end of each: being thus prepared, place one row of ſticks to each line of Peas; which will be ſufficient, eſpecially if placed on the moſt ſunny ſide of the rows, becauſe the ſun's influence will incline all the plants that way, and thereby more readily encounter with the ſticks; placing the ſticks about a foot aſunder, or a little more or leſs, ſo as the branches of the different ſticks meet; and as ſoon as one row is ſticked, then with a hoe draw a little earth up to the oppoſite ſide of the rows of plants, to lay them towards the ſticks: when the whole is ſticked, if the tops of the ſticks appear very ſtraggling and unequal, you may juſt run over them with the garden ſheers to give a little air of regularity.

In gathering the product of Peas, both hands ought always to be employed, one to hold the peduncle, or ſootſtalk of the fruit, while the other pull the pods, otherwiſe the ſtem or main ſtalk of the plant, being ſlender, fragile, and weak, would be very liable to be broken.

The gatherings ſhould always be regular; according as the pods fill, never let them ſtand to grow old, but gather them whilſt young and green, as they are then in greateſt perfection for eating, and the plants will continue longer in bearing.

A crop of Peas continues only about a fortnight in full bearing; during which time they will furniſh a plentiful gathering of pods in their ultimate perfection; though in moiſt ſhowery weather they ſometimes continue ſhooting and flowering three or four weeks, but the produce after the firſt fortnight, is generally inferior both in quantity and quality; hence the neceſſity of repeated ſowings every three or four weeks.

As ſoon as any crops of Peas that have been ſticked are paſt bearing, take up all the ſticks, and tie them in bundles, and ſet them upright in any dry corner; they will ſerve another year.

*Early Culture by Hot-beds.*

By Hot-beds—Where it is required to have a few green Peas as early in the year as poſſible, recourſe is had to the aſſiſtance of hot-beds, as we before ſaid, and the proper ſort of Peas for this purpoſe is the dwarf kind, which by this aid may be brought to bearing in March and April, and the following is the method.

It muſt be previouſly obſerved, that it is rather moſt eligible to raiſe the plants firſt in the natural ground, in October or November, till two or three inches high, then tranſplant them into the hot-bed, in January or beginning of February; for by this practice the luxurian-

luxuriant growth of the plants is ſomewhat checked by removal, ſo as they will be more eaſily contained within due compaſs, and thereby will bloſſom and bear ſooner and more abundantly.

In October or November, therefore, prepare a warm, dry, ſouth border; then having ſome true dwarf Peas, ſow them in drills about a foot aſunder, in the manner as for the common crops, when the plants are come up, and advanced a little in growth, then in a dry day draw ſome fine earth up to their ſtems, which you will repeat as you ſhall ſee occaſion during the winter; obſerving if the froſt ſhould ſet in ſevere, you muſt afford them protection, either of frames, or coverings of mats, or elſe ſome long ſtrawey litter, being careful, however, to expoſe them every favourable day, for they muſt not be drawn up weak and tender.

Then in mild weather, towards the middle or latter end of January, or beginning of February at fartheſt, prepare a hot-bed for one or more of the largeſt three-light frames and glaſſes; the hot-bed may be either be of dung or tan; the latter where it can be obtained eaſily at a moderate expence, is conſiderably the beſt hot-bed for this purpoſe: however, of either of theſe materials make the hot-bed two feet and a half or a yard thick, and cover it with frames and lights, and when arrived to a moderate temperature of heat, put on the earth for the reception of the plants, ſee HOT-BEDS. Chuſe any light good dry earth, and lay it eight or ten inches thick all over the bed; then in a dry mild day, take up the plants out of the border with a trowel, raiſing them with their roots as entire as poſſible, with what earth will readily hang about; and drawing drills in the earth of the hot-bed, from the back to the front of the frame, a foot and a half aſunder, and one or two inches deep, put in the plants in the drills, not more than an inch apart, covering in the earth cloſe to their roots and ſtems, and give a very light watering, juſt to ſettle the earth; which done, put on the lights; being careful to tilt them occaſionally at one end to give vent to the ſteam, &c. obſerving at firſt planting, if in ſunny days the plants ſhould flag, give a moderate ſhade in the middle of the day till the plants have taken root.

After this you will admit freſh air to the plants daily in fine weather to ſtrengthen them, by tilting the lights more or leſs, according to the temperature of the bed and outward air; but keep them cloſe in cold nights, and cover alſo with mats; give occaſional moderate waterings in fine days; and as the plants advance in growth draw a little earth up to their ſtems once or twice; repeating the moderate refreſhments water frequently as the warm ſeaſon advances; which may be given more freely when the plants are in bloom: obſerving according to the advanced growth of the plants and encreaſed warmth of the weather, to give a larger ſhare of freſh air in proportion; and when they are in bloſſom, obſerve if the ſun at any time appears too violent for them through the glaſſes, it is adviſeable to give a very ſlight ſhade an hour or two in the heat of ſunny days; likewiſe when in full bloſſom and fruiting, be ſure to admit plenty of free air, even ſometimes in fine days ſhove the glaſſes entirely off; ſtill alſo continue the waterings more abundantly during the time of ſetting and growth of the pods, and indulge them with the benefit of warm ſhowers.

Thus the plants may be brought to bearing in March and April, and by a ſucceſſion of two crops, in hot-beds made at three or four weeks interval, and managed as above, you may continue a ſupply till the natural ground crops come into bearing in May.

*Hints reſpecting the Culture in Fields.*

In the field culture of Peas, where deſigned to raiſe crops in order to gather the produce green and young for the ſupply of markets, November or rather December is time enough to begin the firſt ſowings, eſpecially in open expoſed grounds; chuſing a dry light ſoil for the forward ſowings.

As to the ſorts of Peas, any of the Hotſpurs for the forward crops, as obſerved in the garden culture, and for a general crop the Reading Hotſpur is excellent; but of the large kinds, chuſe principally the Marrowfats and Spaniſh Morattos for the main crop.

The ground for their reception is prepared by proper ploughing and harrowing; drills are then to be drawn with a hoe, croſs ways the lands, or if with a drill-plough length-ways, two feet at leaſt, or two and a half aſunder for the Hotſpurs, and three for the larger ſorts; no ſticks being intended for theſe field crops; and having ſowed the ſeed, cover them in either with a hoe or rake, though this is ſometimes performed with a harrow; but the hoe or rake will cover them more evenly, and almoſt as expeditiouſly.

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When the plants come up they muſt be kept clean from weeds, by broad-hoeing; but this is ſometimes performed in fields by horſe-hoeing for the ſake of expedition; which having hoes fixed in a ſort of plough horizontally, is drawn by a horſe between the rows, a man holding the plough-ſhafts to guide it; but as this can only cut down the weeds, a common drawing man-hoe muſt be uſed to earth up the plants; though this is often diſregarded in the field-culture, it however proves very beneficial to the crop.

*Saving Seed of all the Varieties.*

To ſave ſeed Peas of the different varieties as perfect each in its kind as poſſible, ſome of each ſort ſhould be ſuffered to ſtand entirely for that purpoſe, or rather ſow ſome of each purpoſely in different parts, and ſuffer the whole produce to remain and ripen for ſeed: this, however, in private gardens is rarely well attended to, for it is a very common practice to gather all the prime whilſt young and green for the table, and let the gleanings remain for ſeed, which, although they will grow very well, and bear in tolerable plenty, yet the produce for the generality will be more ſcanty, ſmaller, and tend to degeneracy.

Obſerving, however, that when intended to raiſe a quantity purpoſely for ſeed, they ſhould be ſowed in February in ſome open ground, in rows two or three feet aſunder, no ſticks being required, and when the plants come up, keep them clean from weeds by hoeing, and hoe the earth up to their ſtems once or twice.

When they are in bloom, examine them row and row, to ſee if there is any degenerate ſort to pull it out, or if any improved variety is diſcovered, to mark it; which is the only method to preſerve both the purity of the known ſorts, and to procure new varieties; for example, if amongſt the Hotſpurs any large ſorts appear, remove them directly; removing alſo any Hotſpurs, &c. from amongſt the large kinds, and different ſorts of each of theſe from each other; and if any new ſort diſcovers itſelf either by flowering earlier than all the reſt, or poſſeſſing ſome other ſingularity, let them be carefully marked to ſave the ſeed of them ſeparate,

According as the ſeeds of all ſorts ripen in July and Auguſt, which is diſcoverable when the pods change brown, and the ſeed becomes a little hard, let the haulm be cut or pulled up in dry weather, and expoſed in heaps in the ſun, turning them every day; and when the ſeed is become perfectly dry and hard, it may either be threſhed out directly, or ſtacked up in the dry till another opportunity; but whenever it is threſhed, keep each ſort ſeparate, and when properly cleaned, put them up alſo ſeparate, in bags or ſacks, with a label to each, expreſſing the name of the variety.

PLANTATIONS, Plantations of trees, woods, &c.

Plantations of trees, &c. greatly embelliſh and improve eſtates, as well as ornament the adjacent country; and thoſe formed into woods for timber-trees, prove not only very beneficial to the owners, but may be ſaid to be a public convenience to the country around, to have the opportunity of purchaſing wood in the neighbourhood, for the various purpoſes of buildings, fencings, making all ſorts of huſbandry implements, as carts, waggons, ploughs, &c. and for innumerable other uſes; alſo for furniſhing fuel, a very eſſential article.

In former ages this iſland abounded in natural plantations or foreſts, which ſpread themſelves over the ſurface of the country, to a very conſiderable extent, and compoſed of various ſorts of loſty trees of prodigious magnitude, all blended promiſcuouſly together, and all of ſpontaneous growth. Thoſe vaſt foreſts were never planted by any human hand, ſuch only have been employed for ages in cutting them down, for in many places there were ſuch a profuſion of uſeleſs wood, that large tracts were obliged to be cleared by degrees, in order to cultivate the ground for other purpoſes; which, together with the neceſſary demands for the timber from time to time for buildings, &c. and that owners of eſtates, reaping conſiderable advantage from the ſale of their timber, continued by by degrees, one generation after another, grubbing up their timber without meaſure; and few ever planted any in lieu of what they cut down; ſo that in many parts there is almoſt a general demolition of woodland, and many conſiderable eſtates have ſcarcely any timber of value left ſtanding, whence comes the preſent ſcarcity in many parts of the kingdom.

Every poſſeſſor of eſtates, either of large or moderate extent, will reap great pleaſure and advantage in dedicating ſome ſhare of his land

land to plantations; for in eſtates of whatſoever extent, they give grandeur and ornament to the premiſes, as well as an air of fertility and riches; and thoſe large plantations deſigned for woods, will, after the firſt eight or ten years, bring in great profit by a gradual thinning of the underwood, beſides leaving a ſufficiency of ſtandards to attain full growth: in the mean time the plantations in general will contribute exceedingly to the beauty of the eſtate; for how deligtfully it is for travellers to behold the noble plantations in groves, thickets, clumps, &c. variouſly diſpoſed in parks, and on the boundaries of ſpacious lawns, and the like places, formed of a great variety of beautiful trees and ſhrubs, and to ſee grand avenues of loſty growth, leading to or from a ſtately manſion, or ſome main road, or ſome adjacent town; and in the out-grounds to obſerve the Plantations of woodlands, &c. ranging along the ſides of hills, plains, and other grounds occaſionally; but in eſtates how fertile ſoever the ſoil, yet it appears naked and barren without a proper ſhare of Plantations; on the other hand, when eſtates are beautifully diverſified with Plantations, the whole may be ſaid to form a ſort of pleaſure-garden; eſpecially as in the homeward Plantations we may have commodious walks of gravel and ſand, both private, ſhady, and ſheltered walks, occaſionally diſpoſed in many winding turns in the ſerpentine way, bordered with hardy ſhrubs and flowers, which will afford moſt agreeable walking at almoſt any ſeaſon of the year, as in ſummer they afford a ſcreen from the vehement heat of the ſun, and at other times ſhelter from boiſterous winds, and cold piercing blaſts; there may be alſo here and there receſſes or places of retirement, leading by private turnings from the principal walks; with glades or openings of graſs-ground in the midſt of the moſt extended parts of the Plantations. See PLEASURE-GARDEN.

No land-holder, therefore, let the extent be almoſt ever ſo moderate or conſiderable, but ought to appropriate a proportionable ſhare to commodious Plantations as ſoon as poſſible, either for ornament or emolument, or both, where the extent will admit, as there is hardly any eſtate that does not afford ſoil and ſituation proper for the cultivation of all our hardy trees, &c. and in many places often furniſh ſoils improper for graſs and corn, yet adapted to the growth of many ſorts of trees, which would form good Plantations, and ſecure to the planter and his poſterity a future pleaſure and revenue of conſiderable importance.

In ſhort there is hardly any ſoil ſo barren and untractable but what will rear a growth of trees and ſhrubs of ſome ſpecies or other, both for ornament and advantage; and there is ſcarcely any kind of tree ſo bad but may be raiſed to one or other of thoſe purpoſes: any very poor ground, or ſuch that lie waſte, or at a great diſtance, cannot be better improved than in Plantations; even although a tract of land ſhould be ſo poor as to rear nothing but a crop of aſpen trees, alder, and willows, yet the profits even of theſe productions will greatly exceed what many may think.

So that there is a great number of examples to encourage, and warrant ſucceſs in Plantations, to reward not only with the pleaſure of ornamenting his lands, and that of beholding their growth, but alſo with profit ſufficient to compenſate amply for the tract of land occupied, and labour in planting.

But to many perſons, the neceſſary expence attending the making a Plantation, and knowing that they muſt wait ſeveral years before the trees have made any conſiderable progreſs, or can reap any advantage therefrom, often proves an obſtacle in attempting the proſecution of that buſineſs; but as to the expence of planting, if you raiſe the plants in your own grounds, it will not prove near ſo great as many might imagine, eſpecially as a ſmall ſpot of ſeminary or nurſery-ground will raiſe plants enough in three or four years to plant a great many acres of land, both ornamental and woodland; and by the latter, the expence of raiſing and planting them, together with the loſs of time in waiting a few years till the plants attain ſome growth, will be compenſated by the firſt fall or thinning of the underwood, in eight or ten years after planting; and the ſtools or roots remaining ſhoot up again, and afford a lopping every eight or ten years, excluſive of the due portion of ſtandards left at proper diſtances, to attain full growth for timber, as aforeſaid.

One particular precaution in making Plantations, is the judicious choice of ſuch trees as are the beſt adapted to the nature of particular ſoils, which may vary exceedingly in eſtates of great extent; however, ſuch trees

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as we find daily growing by road-ſides, hedge-rows, and in any adjacent grounds are rough ſketches of what the land will produce.

As to the ſorts of trees and ſhrubs proper for Plantations in general, there is a vaſt variety, both of the deciduous and ever-green tribes, that will proſper in the open ground in any common ſoil. See DECIDUOUS and EVER-GREEN TREES, &c.

It is of importance, in making any conſiderable Plantation, to chuſe principally young plants, of from about two or three to five or ten feet ſtature, which always prove more ſucceſsful than older trees; for although ſome perſons being in haſte to have Plantations as forward as poſſible in a few years, tranſplant tall trees, perhaps twelve or fifteen feet high or more, particularly for ornamental Plantations; yet younger growth always take root ſooner, and more firmly eſtabliſh themſelves, ſo as to form conſiderably the fineſt Plantations at laſt, and be of longeſt duration; for although large trees of from ten to twenty feet height, eſpecially of the deciduous kind, may with care be tranſplanted, ſo as to grow and probably thrive tolerably for ſome years, yet trees more than twelve or fifteen feet high often fail, by not rooting firmly like young plants, and after ſome years ſtanding, have hardly made any ſhoots, and at laſt gradually dwindle and periſh; therefore large trees ſhould never be employed for Plantations only on particular occaſions, where a few may be neceſſary to form an immediate ſhade or blind, &c. in ſome particular place; but for general work, be perſuaded to employ chiefly young plants, either of your own raiſing, or purchaſed from the nurſeries. And for timber Plantations in particular, I would chuſe ſuch plants as are only from about two or three, to five or ſix feet in height. See PLANTING.

All the different ſorts of trees and ſhrubs proper both for ornamental and timber Plantations, may be had at all the public nurſeries moderately reaſonable; though perſons accommodated with ſcope of ground, may eaſily raiſe all the ſorts for his own private uſe, by the methods directed under the reſpective genera: a ſmall nurſery will raiſe trees and ſhrubs enough to plant many acres of land. See NURSERY.

Obſerve, that where Plantations are intended principally for ornament, as great a variety as poſſible of the different ſorts of hardy trees and ſhrubs ſhould be employed, to afford the greater ſource of entertainment; and ſhould conſiſt both of lofty and middling trees, down to the humbleſt ſhrub. See DECIDUOUS and EVER-GREEN TREES. Diſpoſing the deciduous and ever-green plants principally in ſeparate compartments; ſometimes arranging the tree-kinds by themſelves, ſome in running irregular Plantations, towards the boundaries of ſpacious lawns, parks, paddocks, &c. others in avenues, groves, thickets, and clumps, as aforeſaid, variouſly diſpoſed in different parts; and ſometimes arranging the trees and ſhrubs together, in forming ſhrubberies, wilderneſs, ſhady walks, and wood-works; placing the taller growth backward, and the lower in front; bordering the whole with the moſt beautiful flowering ſhrubs, and ſhowy ever-greens, eſpecially next the principal walks and lawns; obſerving to vary the form of all the ſeveral compartments, ſometimes by bold ſweeps and curves outward and inward, of different dimenſions, other parts in long eaſy bends, irregular projections and breaks, ſo as to diverſify the ſcene in imitation of a natural Plantations. Allow all the ſorts proper diſtances, which may be from five or ten to fifteen or twenty feet, for example, the tall trees deſigned for continued Plantations may be from ten to fifteen or twenty feet, varying the diſtance in different parts, according as light and ſhade, &c. may be proper; and thoſe in groves, may, if open groves, be fifteen or twenty feet diſtance, and cloſe groves ten or twelve; for thickets, five or ſix feet, or cloſer in particular places where a very dark ſhade, or thick coverture of wood is required; and in clumps of trees, may allow from five or ten to twenty feet between the trees in each clump, varying the diſtance occaſionally, as alſo the ſorts and numbers of trees in each, from two or three to ten or more: likewiſe the form of the clumps; ſome may be triangular, others quadrangular, pentangular, &c. and ſome in curves, others in ſtraight lines, to cauſe the greater variety. And as to the ſhrubbery clumps, and wilderneſs compartments, where the trees ſhrubs are employed promiſcuouſly together, they may be planted from five to ten feet diſtance; the taller growth being placed backward eight or ten feet aſunder, placing the lower plants gradually forward according to their gradation of ſtature, to the loweſt in front, as above obſerved, at four or five feet diſtance: and if the trees and ſhrubs of the Plantations in general are diſpoſed ſomewhat in the quincunx way, they will appear to the greater advantage.

But when deſigned to form large Plantations into woods, &c. compoſed principally of

foreſt and timber-trees for profit, particular ſorts muſt be choſen, conſiſting both of deciduous and ever-green trees. Of the deciduous kinds chuſing the oak, elm, aſh, beech, cheſnut, hornbeam, birch, alder, maple, ſycamore, plane-tree, poplar, lime-tree, walnut-tree, wild cherry-tree, mountain-aſh, larch-tree, willow-tree, hazel-tree, &c. and of the ever-greens, the pine-trees, firs, cedar of Lebanon, holly-tree, bay-tree, laurel-tree, yew-tree, ever-green oak, box-tree, and ſome others. See FOREST-TREES. The particular deſcription and culture of all of which ſorts, deciduous and ever-greens, are exhibited in their proper genera. They are all hardy, and will grow in almoſt any common ſoil, rich or poor, and moſtly alſo in dry or moiſt ground, high or low; allotting, however, particular ſorts to very low marſhy ſoils, ſuch as the willow, ſallow and oſier, poplar, alder, and other aquatics, which will proſper in places that are in a manner covered with water, and are the moſt proper ſorts for the embelliſhing and improvement of ſuch grounds: all the other ſorts will ſucceed in any other more upland places out of water; obſerving, with reſpect to diſpoſition, the deciduous and ever-greens ſhould generally be ſeparate, as obſerved for the ornamental Plantations. But the trees of the ſame tribe may ſometimes be intermixed, and ſometimes different ſorts in ſeparate diviſions or quarters, as oaks in one, elms in another, &c. remarking likewiſe in timber Plantations, that all the trees ſhould be planted pretty cloſe together, i. e. not more than three or four feet diſtance, in order that they may mutually draw each other up tall, more expeditiouſly, and to allow for a gradual thinning, as hereafter directed.

In forming woods, however, or Plantations of timber-trees, the following hints in reſpect to planting them are proper to be obſerved.

Let it therefore be remarked, that there are two methods practiſed in forming Plantations of woodlands; one is by raiſing the trees from ſeed at once on the ground where the Plantation is intended to be, eſpecially of the deciduous kind, and is effected by ſowing the ſeed in drills, a yard aſunder, and the plants always to remain where raiſed, thinning them gradually: the other method is by previouſly raiſing the plants in a nurſery, till two or three feet high, then tranſplanting them into places allotted them, in rows the above diſtance, to allow alſo for gradually thinning.

Either of theſe two methods may be practiſed, as ſhall ſeem moſt convenient to the owner; but the former, i. e. raiſing the plants where they are to remain, that although it may be more expeditious, and that at once to get rid of the trouble of tranſplantation, yet they will require greater attendance for a few years, till the plants have ſhot up out of the way of weeds; but on the other hand, the trees always remaining where raiſed, not diſturbed by removal, they probably may make the greater progreſs. The latter method, however, of raiſing the trees firſt in a nurſery, is rather the moſt commonly practiſed, as being thought the leaſt troubleſome and expenſive, with regard to the attendance at firſt of the young growth. However, every one is at liberty to make the experiment as it ſuits his convenience.

The preparation of the ground for the final reception of the ſeed or plants of theſe Plantations, is by deep ploughing and harrowing, upon ſuch ground where the plough can be employed; where this, however, or any other tillage is not practicable, we muſt uſe only young plants from the nurſery, making holes, &c. at proper diſtances, for the reception of each plant: where, however, the ground can be tilled, it will prove very advantageous, performing it previouſly a year at leaſt before; ſowing it with a crop of turneps, or the like: when theſe come off, well plough and harrow the ground again, for the reception either of the ſeed or plants the enſuing ſeaſon.

The moſt proper ſeaſon to perform this planting, either by ſeed or plants, is any time in dry mild weather, from October or November till February, though November and February are rather the moſt eligible for moſt kinds of hardy tree ſeeds: however, where large tracts are to be planted, both methods muſt be purſued all winter, at every favourable opportunity.

If ſeed is intended, you muſt be well provided with ſeeds of the ſeveral deciduous trees in particular, which may be obtained at all the nurſeries and eminent ſeed-ſhops; then, for its reception, draw furrows or drills about two or three inches deep, and three or four feet aſunder, ſcatter the ſeed along the middle of the drills, and cover the earth evenly over them, the depth of the drills or furrows, and place ſcare-crows and traps to guard againſt

againſt the inſults of birds and vermin.

But if deſigned to form the Plantation with young plants, previouſly raiſed in beds in the nurſery by the common method, let the following practice be obſerved: chuſe always young plants, only from two to three or five or ſix feet high; and if very large Plantations are intended, you may, to ſave time and trouble, take the plants immediately from the ſeed-bed, when one or two feet high, without giving them any previous tranſplantation in the nurſery; though where the Plantations are but moderate, it is moſt eligible to plant them out previouſly in nurſery-rows, to have two or three years growth: but for remarkable large Plantations, this would be a very great trouble and expence. Being, however, furniſhed with young plants, they are to be planted in rows, three or four feet aſunder, as directed for the ſeed, and one or two feet apart in the lines: they may be planted either by opening ſmall apertures or holes with the ſpade for each plant; or, if very ſmall plants, it is ſometimes performed by making only a ſlit or crevice with the ſpade for each plant; and ſome open ſmall trenches the whole length, then one inſerts the plants whilſt another trims in the earth about their roots: ſome again, in very large tracts, where the ſituation admits of good ploughing and harrowing to divide and break the earth into ſmall particles, open furrows with a plough, two perſons being employed in depoſiting the trees in the furrow, whilſt the plough following immediately with another furrow, covers the roots of the plants with the earth thereof. See PLANTING.

The ground where the above Plantations are made ſhould be previouſly fenced all round with a deep ditch, &c. to guard againſt the encroachments of cattle.

Whilſt theſe plantations are young, they muſt have ſome attendance to deſtroy weeds, which may be expeditiouſly executed by hoeing between the rows in dry weather, particularly by horſe-hoeing; and this care will be needful for two or three years, eſpecially the ſeedling Plantations, till the trees are advanced out of the reach of weeds; after which no farther trouble will be required until the trees are ready for the firſt fall or thinning, for poles, faggots, &c.

In eight or ten years growth, they will be of a proper ſize to begin the firſt fall by a moderate thinning, which will ſerve for poles and faggot-wood, to pay towards the expence of planting, &c. but begin lopping only part of the Plantation the firſt year; thinning out the weakeſt and moſt unpromiſing growth firſt; leaving a ſufficiency of the moſt vigorous plants pretty cloſe, to grow up for larger purpoſes; the year following begin thinning another part, and ſo continue an annual thinning-fall till got through the whole plantation; cutting each fall down near the ground, leaving the ſtools to ſhoot out again, eſpecially of the deciduous kinds, and by that time you have made the laſt fall, the firſt will have ſhot up, and ready to be cut again; ſo the returns of fallings may be contrived to be every ſix, ſeven, eight, or ten years, or more, according to the uſes the poles or wood are wanted for; and if larger poles, &c. are wanted, the fall may be only once in fourteen, eighteen, or twenty years, ſtill, at every fall, being careful always to leave enough of the moſt thriving plants for final ſtandards; leaving them pretty cloſe at firſt, that they may mutually draw each other up in height; but may be thinned every ſucceeding fall as they encreaſe in bulk and meet, ſo as to leave a ſufficient quantity of the principal trees at proper diſtances to grow up to timber, which in their turn, as they become fit for the purpoſes intended, may alſo be felled according as there may be a demand for them to the moſt advantage; having young ones from the ſtools coming up in proper ſucceſſion as ſubſtitutes, ſo as the ground may be always occupied.

PLANTING. Planting is the art of inſerting plants, ſeeds, and roots, in the earth for the purpoſe of vegetation.

There are various methods of Planting in practice for different ſorts of plants, ſeeds, and roots; ſuch as hole Planting—trench Planting—trenching-in Planting—ſlit or crevice Planting—holeing-in Planting—drill Planting—bedding-in Planting—furrow Planting—dibble Planting—trowel Planting—Planting with balls of earth about the root—Planting in pots, &c. all of which methods of Planting are occaſionally uſed by different practitioners in the ſeveral branches of gardening, according as the ſeveral methods ſhall ſeem moſt eligible for different or particular ſorts of plants. Obſerving that although moſt of the different operations are hinted in many different parts of this work in the culture of the various ſpecies of each genus, we nevertheleſs judge it expedient under this head, to exhibit ſome general directions of the manner each method is performed; together with

ſome hints of the kinds of plants, &c. that are commonly planted by the different methods, which may prove uſeful to young practitioners in performing the mechanical operations of Planting.

1. *Hole Planting.*—This is the principal method practiſed in the final Planting of all ſorts of trees and ſhrubs in the full ground, by opening with a ſpade round holes in the ground, at certain diſtances, one for the reception of each plant. Each hole ſhould be digged capacious enough to admit all the roots of the tree or ſhrub freely every way to their full ſpread, without touching the ſides of the hole, and about one ſpade deep, or a little more or leſs, or according to the ſize of the roots, ſo as, when planted, the uppermoſt ones may be only about three inches below the common ſurface, or about as low as they were before in the ground, which is diſcoverable by examining the bottom of the ſtem of the tree; though in very humid ſoils, where the water is apt to ſtand, the holes ſhould rather be ſhallow, ſo as the uppermoſt roots may ſtand full as high as the general level, or higher if it ſhall ſeem neceſſary, raiſing the ground about them, eſpecially in winter Planting: let the holes, however, be of a proper width and depth, according to the above rules, looſening the bottom well; and if too deep, it is eaſily remedied in the time of Planting, by ſhaking up the tree as you ſhall ſee occaſion; obſerving in digging out each hole, to lay the earth in a heap cloſe to the edge, in order to be ready to fill in again: the holes being ready, then, having trimmed the roots, &c. of the trees, as hereafter directed, place one tree in the middle of the hole, making all its roots ſpread equally around; a perſon holding the plant erect by the ſtem, whilſt another with his ſpade caſts in the earth about the roots, taking particular care to break all large clods, and trim in ſome of the fineſt mould firſt all round about the roots in general, ſhaking the tree occaſionally, to cauſe the fine ſoil to fall in cloſe among all the ſmall roots and fibres; at the ſame time if the tree ſtands too deep, ſhake it up gently to the proper height, and having filled in the earth to the top of the hole, tread it gently all round, firſt round the outſide to ſettle the earth cloſe to the extreme roots, continuing the treading gradually towards the ſtem, to which tread the mould moderately firm, but no where too hard, only juſt to ſettle the earth, and ſteady the plant in an upright poſition: then pare in all the remaining earth evenly round the tree, to the width of the hole, raiſing it ſomewhat above the general level of the ground, to allow for ſettling, giving it alſo a gentle tread, and finiſh it off a little hollow at top, baſon-like, the better to receive and retain the moiſture from rains, and occaſional waterings in ſpring and ſummer, particularly to the choicer kinds of trees and ſhrubs.

After performing this Planting, if in winter, or late in ſpring, it may be of advantage to the choicer kinds of trees and ſhrubs to mulch them, i. e. to lay ſome long mulch at top of all the earth, both to keep out the winter's froſt, and prevent the drying winds and drought of ſpring and ſummer from penetrating to the roots before the trees are well rooted in their new quarters; ſee MULCH. But ſome inſtead of mulch, uſe graſs turfs, turned topſy-turvy, eſpecially when planting upon any graſs ground, or any out-plantations where turfs of graſs can be obtained; or in orchards, where the ground is graſs; in which caſe it may be proper to bank ſome turfs round the ſides and top of each hole, particularly for large trees, which will ſteady them more effectually, as well as preſerve the moiſture, if much dry weather ſhould happen the ſucceeding ſummer.

The above work, however, of mulching or turfing new-planted trees, is not abſolutely neceſſary to our common hardy kinds of fruit-trees, foreſt-trees, and ſhrubs; though it may prove beneficial to all ſorts, but more particularly to the more tender kinds of wall fruit-trees, and more delicate ſorts of flowering-ſhrubs, choice ever-greens, and ſome kinds of herbaceous perennials.

2. *Trench Planting.*——This method is ſometimes practiſed in the nurſery-way, in putting out ſeedling and other ſmall trees and ſhrubs in rows; is alſo uſed for Planting box edgings; ſometimes likewiſe for Planting ſmall hedge-ſets, &c. and always in Planting *Aſparagus*, and is performed by opening a long narrow trench with a ſpade, making one ſide upright, ſo place the plants againſt the upright ſide, and turn the earth in upon their roots.

If for young ſeedlings, or other ſmall trees and ſhrubs, &c. the ground is previouſly trenched or digged; a line is then ſet, and with a ſpade held with its back towards the line, cut out a narrow trench, ſix or eight inches deep, turning the earth from the line, making the line-ſide nearly perpendicular; the

plants

plants are then inſerted in the trench at ſmall diſtances, cloſe to the upright ſide, covering in the earth about the roots as you proceed in planting them; and having planted one row, tread the earth evenly all the way along, to ſettle it cloſe, and fix the plants ſteady; and ſo proceed row and row.

But in planting larger trees in the nurſery way by *Trench Planting*, a more capacious trench will be requiſite: ſometimes a trench one or two ſpades wide, with proportionable depth, according as the roots of the trees ſhall require; ſo having opened it all the way along the intended row, proceed to place the trees along the middle of the trench, filling in ſome earth to each tree as you place it, one perſon holding it erect whilſt another throws in the earth; and having placed one row, trim in all the remaining earth evenly, then tread it cloſely all the way to fix the plants ſteady and perfectly upright.

3. *Trenching-in Planting.*]——This is alſo ſometimes practiſed in light pliable-working ground, for Planting young trees in the nurſery-way, and ſometimes in Planting hedge-ſets, &c. and is performed by digging along by a line, about one ſpade wide, and Planting as you go on. The method is this, a line is ſet, then having the plants ready, and with your ſpade beginning at one end, and ſtanding ſide-ways to the line, throw out a ſpit of earth, which forming a ſmall aperture, another perſon being ready with the plants, he directly depoſits one in the opening, whilſt the digger proceeds with the digging one ſpade wide, covers the roots of the plants with the earth of the next ſpit; and another aperture being thereby alſo formed, place therein another plant, the digger ſtill proceeding, covers its roots, as before, with the next ſpit of earth; and ſo on to the end of the row, placing them at about a foot, or fifteen or eighteen inches aſunder, according to the ſize of the plants; obſerving, when Planting larger trees with more ſpreading roots, by this method, that inſtead of digging the trench only one ſpade wide, two may probably be requiſite for the proper reception of the roots likewiſe in forming the opening for each plant, make it capacious enough to receive the roots freely, digging the earth over them as above. After having planted one row, either ſmall or large plants, tread the earth evenly along to ſettle it to the roots, and ſteady the plants all equally upright.

Another method of *Trenching-in Planting* is ſometimes uſed for Planting ſome ſorts of roots, ſuch as horſe-radiſh ſets, potatoes, &c. performed by common trenching, placing a row of ſets in each trench. The horſe-radiſh ſhould be placed in the bottom of the open trench, at fifteen or eighteen inches depth, turning the earth of the next over them; and the potatoe-ſets place about ſix inches deep, and cover them alſo with the earth of the next trench. See COCHLEARIA *Armoracia*, and SOLANUM *Tumeroſum*.

4. *Slit Planting.*]—This method is performed by making ſlits or crevices with a ſpade in the ground, at particular diſtances for the reception of ſmall trees and ſhrubplants. A ſlit being made for each plant, which are inſerted as you go on; and is practiſed ſometimes in the nurſery-way, &c. in putting out rows of ſmall plants, ſuckers, &c. at from about a foot to eighteen inches or two feet high, and that have but ſmall roots: it is alſo ſometimes practiſed for final Planting in out-grounds, where very large tracts of foreſt-trees are intended, and that they are to be planted out at the above ſizes, and by the moſt expeditious and cheapeſt method of Planting; the following is the method.

A line is ſet, or a mark made accordingly; then having a quantity of plants ready, for they muſt be planted as you proceed in making the ſlits, a man therefore having a good clean ſpade, he ſtrikes it into the ground with its back cloſe to the line or mark, forms a crevice, taking it out again directly, ſo as to leave the ſlit open, gives another ſtroke at right angles with the firſt, then the perſon with the plants inſerts one immediately into the ſecond-made crevice, bringing it up cloſe to the firſt, and directly preſs the earth cloſe to the plant with the foot; proceed in the ſame manner to inſert another plant; and ſo on till all is finiſhed, which is a very expeditious way of putting out ſmall plants, for any conſiderable plantation. See PLANTATIONS.

A man and a boy by this method will plant ten or fifteen hundred, or more in a day.

5. *Holeing-in Planting.*]—This is ſometimes uſed in the nurſery-way in light looſe ground; alſo ſometimes in Planting potatoes, &c. in pliable ſoils.

The ground being previouſly digged or trenched, and a line placed, they proceed thus:

thus: a perſon with his ſpade takes out a ſmall ſpit of earth, to form a little aperture, in which another perſon directly depoſits a plant, &c. the digger at the ſame time taking another ſpit at a little diſtance, turns the earth thereof into the firſt hole over the roots; placing directly another plant in this ſecond opening, the digger covers it with the earth of a third, and ſo on to the end of the row.

6. *Drill Planting.*]——This is by drawing drills with an hoe from two to four or five inches deep, for the reception of ſeeds and roots, and is a commodious method of Planting many ſorts of large ſeeds, ſuch as walnuts, cheſnuts, and the like; ſometimes alſo broad beans, but always for kidney-beans, and peas: likewiſe for Planting many ſorts of bulbous roots, when to be depoſited in beds by themſelves.

The drills for all of which purpoſes ſhould be drawn with a hoe, two or three inches deep, ſee HOE; though for large kinds of bulbous roots, four or five inches depth will be requiſite, covering-in the ſeeds and roots with the earth, always the depth of the drills.

7. *Bedding-in Planting.*]—This is frequently practiſed for Planting the choicer kinds of flowering bulbs, ſuch as *Hyacinths*, &c. alſo for larger ſeeds of trees, as acorns, large nuts, and other larger kinds of ſeeds, ſtones, and kernels, and is performed by drawing the earth from off the tops of the beds ſome inches depth, then planting the ſeeds or roots, and covering them over with the earth, drawn off for that purpoſe. The following is the particular method.

The ground muſt be previouſly digged or trenched, raked, and formed into beds three or four feet wide, with alleys between bed and bed; then with a rake or ſpade trim the earth evenly from off the top of the bed into the alleys, from three to four or five inches deep for bulbous roots, and for ſeeds, one or two, according to what they are, and their ſize; then, if for bulbous roots, draw lines along the ſurface of the bed, nine inches diſtance, place the roots bottom downward, along the lines, ſix or eight inches apart, but, if ſeeds, they may be ſcattered promiſcuouſly; and having thus planted one bed, then with the ſpade, let the earth that was drawn off into the alley, be ſpread evenly upon the bed again over the roots or ſeed, &c. being careful that they are covered all equally the above depth, and rake the ſurface ſmooth.

This method is much in practice among floriſts for the choicer ſorts of bulbous flowers.

The nurſerymen alſo practiſe this method in Planting many of their larger ſeeds, nuts, &c.

Another method of *Bedding-in Planting* I have ſeen practiſed in ſome parts, particularly for planting potatoes, in low wet grounds; which is by dividing the ground into beds, four feet wide, with alleys two or three feet wide between bed and bed; then digging the beds, place the potatoe-ſets in three rows rows along each bed, a foot aſunder in the row; this done, dig the alleys one ſpade, caſting the ſoil upon the over the ſets, ſo as beds to cover them about ſix inches deep: thus if the ground is very wet, the alleys will drain the moiſture from the beds, ſo as ſometimes to afford very great crops.

8. *Furrow Planting.*]—This is by drawing furrows with a plough, and depoſiting ſets or plants in the furrow, covering them in alſo with the plough; and is ſometimes practiſed for planting potatoe-ſets in fields, and has been practiſed in planting young trees for large tracts of foreſt-tree plantations, where the cheapeſt and moſt expeditious method is required; but this method can be practiſed only in light pliable ground, and is performed thus; a furrow being drawn, one or two perſons are employed in placing the ſets or plants in the furrow, whilſt the plough following immediately with another furrow, turns the earth thereof in upon the roots of the plants.

We do not, however, recommend this method of Planting potatoes for general culture; only perſons that have ſcope of ground may try the experiment.

9. *Dibble Planting.*]—This is the moſt commodious method for Planting moſt ſorts of fibrous-rooted ſeedling plants, particularly all the herbaceous tribe; alſo for planting ſlips, off-ſets, and cuttings both of herbaceous and ſhrubby kinds; likewiſe for ſome kinds of ſeeds and roots, ſuch as broad-beans, potatoe-ſets, Jeruſalem artichokes, and horſe-radiſh-ſets, with numerous ſorts of bulbous roots, &c. and is expeditiouſly performed with a dibble or ſetting-ſtick, therewith making a narrow hole in the earth for each plant, inſerting them in each hole, always as you go on; obſerve the following hints.

Having a dibble or ſetting-ſtick, it is uſed by thruſting it into the earth in a perpendicular deſcent, in depth as the particular plants, &c.

&c. may require; directly inſerting the plant, ſeed, or ſet, according as each hole is made, cloſing the hole immediately by a ſtroke of the dibble. So proceed dibbling the holes and Planting as you go on, at particular diſtances and depths, according to the nature of the Plants, &c. as exhibited in their reſpective genera: obſerving, in ſetting any kind of plants, ſlips, cuttings, and the like, having long ſhanks or ſtems, it is proper to make holes a proper depth, to admit them ſome conſiderable way in the ground; for example, cabbage-plants, ſavoys, &c. ſhould be planted down to their leaves; ſlips and cuttings ſhould be inſerted two parts of three, at leaſt, in the ground; being particularly careful in dibbling-in all ſorts of plants, to cloſe the holes well in every part about the roots, by ſtriking the dibble ſlantways into the ground, ſo as to ſtrike the mould firſt firmly up to the root and fibres, at the ſame time bringing it cloſe to the ſtem; for in dibble Planting, many only ſtrike the earth about the neck of the plant, and the lower part of the hole is often left hollow about the roots; but by ſtriking the dibble firſt at the root-part, you fix the plant effectually, then a ſtroke of the dibble at the top of the ground finiſhes, by cloſing up every part of the aperture. In this manner continue Planting and finiſhing each hole as you go on, perfectly cloſe that neither the ſun, air, nor penetrating winds can enter, this being of much importance; but often diſregarded, as we may often ſee the holes that are neceſſarily made in fixing the plants left open, which may be eaſily cloſed as they go on with the utmoſt facility, each hole at the inſertion of its plant, at one ſtroke of the dibble, as above ſaid.

For the ſorts of dibble, and ſome other particulars in dibble Planting, ſee DIBBLE.

10. *Trowel Planting.*]—This is performed with a garden-trowel, which being made hollow like a ſcoop, is uſeful in tranſplanting many ſorts of young fibrous-rooted plants with balls of earth about their roots, ſo as they may not feel their removal. See *Planting with Balls of earth, &c.*

The trowel is employed both in taking up the Plants, and planting them; obſerving the plants having been previouſly pricked out from the ſeed-bed or elſewhere, at certain diſtances, and having been of ſome ſtanding for their roots to have got good hold of the ground, they by aid of the trowel may be readily taken up, each with a good ball of earth about all its roots; and then with the trowel making a hole for it in the allotted place, inſert it in the hole with the whole ball of earth entire, and give a little water: thus the plants will ſcarcely feel their removal, and often continue their growth without loſs of time, as if they had not been tranſplanted at all.

11. *Planting with Balls of Earth about the Roots.*]—This is the removing a plant with a large ball of earth about its roots, ſo as the plant by having its roots firmly attached to the ſurrounding ball of earth, it ſtill, during the operation, continues its growing ſtate without receiving any or but very little check from its removal; and is often practiſed more particularly to the more delicate and choicer kinds of exotics, both trees, ſhrubs, and herbaceous plants: likewiſe when intended to remove any ſort of tree or plant out of the proper Planting ſeaſon, as very late in ſpring, or in ſummer, it is eligible to tranſplant it with a good ball of earth to preſerve it more certainly in a ſtate of growth. Obſerving, ſome trees and ſhrubs are more difficult to remove with a ball than moſt kinds of herbaceous fibrous-rooted plants, though many of the tree and ſhrub kinds, having very fibrey roots, they will alſo readily riſe with good balls.

However, in tranſplanting any of the tree and ſhrub kind by this method, if they grow in the full ground, we muſt be careful to begin to open a trench with a ſpade at ſome conſiderable diſtance round the ſtem, perhaps a foot, or two or three, according to the ſize of the tree and expanſion of the roots, digging a ſort of trench all round, a ſpade or two wide, or more if large trees, and in depth below all the roots; all the time having great care not to diſturb the ball, or maſs of earth between the ſtem and trench, but preſerve it as entire as poſſible, for if we looſen this part about the roots, the intended effect of ſtill preſerving the tree in a growing ſtate, will fail. Having, however, dug down below the roots all round, you muſt then undermine the ball on every ſide, below all the roots, till the whole ball is detached from the main ground; then remove the tree with its entire ball carefully to its deſtined place, having a capacious hole ready opened, if for the full ground, or if for pots have ſuch that are ſome inches wider than the ball to admit of a portion of freſh earth all round; in either method, however, plant the tree or ſhrub with its

its whole ball entire, and fill in the earth evenly all round it, preſſing it gently down, and give a moderate watering round the outſide to ſettle the earth cloſe to every ſide of the ball, then place a ſtake for ſupport.

But when trees or ſhrubs, with balls to their roots, are intended to be ſent to any conſiderable diſtance, they ſhould be placed in oſier baſkets, in order to preſerve the coheſion of the ball, having a baſket for each tree; the baſkets to be of an upright make, in width and depth in proportion to the ball, with two handles at top, and worked rather open at the ſides, becauſe ſometimes the baſket and all is placed in the ground, when the plant cannot be readily removed without danger of breaking the ball of earth; ſo that the ſides being a little open, the roots may have liberty to ſhoot out; moſt baſket-makers know how to make them. Having, however, the baſkets, put a little good earth in the bottom of each, then place the plant with its ball, fixing it properly in an upright poſition, obſerving likewiſe, in their carriage to the allotted places, to preſerve them in an upright poſture. In Planting them, if they cannot be readily moved out of the baſkets without diſturbing the ball of earth, plant baſket and all as aboveſaid; cut it here and there in the ſides, and throw ſome fine mould cloſe all round ſo as to join with that of the ball, and give a watering to ſettle it more effectually cloſe; the roots and fibres will readily make their way through the ſides of the baſket; beſides, the baſkets will ſoon rot, without proving any obſtruction to the growth of the plants.

But ſometimes, inſtead of baſkets, ſmaller young trees and other plants with balls, intended to be ſent to any diſtance, are placed in pots, one plant in a pot, and if they are to be placed in the full ground, turn each out of the pot with the ball entire; or if it ſeemingly will not readily quit the pot without ſeparating, break the pot, to preſerve the coheſion of the ball.

Many ſorts of herbaceous fibrous rooted plants, however, may readily be taken up with balls with very little trouble, by reaſon of their numerous fibres, to which the earth cloſely adheres in a compact lump all round the root; and with a ſpade or trowel may often be taken up with balls with the utmoſt facility, and in ſome ſorts the earth of the ball will cling ſo cloſe as to admit of being ſent to ſome diſtance without being potted; others again being leſs fibrous, require the aſſiſtance of a pot to preſerve the ball entire till arrived at its place of deſtination.

And as to trees and other plants that have generally grown in pots, the tranſplanting them with balls is very eaſy, for if they have been of ſome ſtanding in the pot, the whole earth thereof will by means of the numerous fibres, be formed into one compact lump, as it were, that it will readily come out entire and firm; or to ſuch as do not ſo eaſily quit the pot, thruſt a long blade of a knife, or ſome other thin inſtrument, down between the outſide of the ball and pot all round, it will then readily come out either in drawing by the ſtem of the plant, or, by ſtriking the edge of the pot with ſomething; or, if ſmall plants, may turn the pot mouth downward, and ſtrike the edge gently againſt any thing: obſerve, in replanting thoſe potted plants, that if the ſides of the ball of earth is much matted with the fibres of the root, it is proper to pare off the groſſeſt part, together with a little of the old earth, eſpecially if to be planted in pots again; then Planting it in a pot a ſize larger than before, filling up all round with freſh mould, and finiſh with a moderate watering. See *Planting pots*, below.

The advantage in Planting with balls, either in the full ground, or in pots, is, the root of the plant being encloſed in the ball of earth, continues all the while drawing nouriſhment, and the growth of the plant is not retarded in waiting till it has taken freſh root in its new place, which may be of advantage in many caſes, particularly all tender plants, ſome of our choiceſt ever-greens, and many kinds of herbaceous flower plants.

But Planting with balls is not recommended for general practice, for all the hardy tree and ſhrub kind it would be needleſs as well as very expenſive and troubleſome.

12. *Planting in pots.*]—This is practiſed to all tender exotics, in order for moving them to ſhelter occaſionally, ſuch as all kinds of green-houſe and hot-houſe plants; and it is likewiſe practiſed for many ſorts of hardy flowering-plants, for the convenience of moving them occaſionally to adorn any particular compartments; and for the convenience of moving ſome curious ſorts when in flower to occaſional ſhelter from the ſun's rays, and exceſſive rains, in order to preſerve their beauty and prolong the time of their bloom; ſuch as the fine auriculas, carnations, &c.

In

In Planting in pots, it is highly requiſite carefully to adapt the ſizes to the ſize and nature of the different plants intended to be potted; if ſmall plants, begin firſt with ſmall pots, one plant only to each pot, eſpecially if to remain; but according as the different plants advance in growth, ſhift them into pots one or two ſizes larger, which may be requiſite to many ſorts once a year, to others once in two or three years, according to the nature and encreaſed growth of the reſpective plants: though to ſome ſort of annuals it may be neceſſary once or twice in the courſe of a ſeaſon; all of which is generally particularized in the culture of the various ſorts. And by thus beginning firſt with ſmall pots adapted to the ſize of the plants, it is not only cheaper and more commodious for moving and ſtowing them in different parts occaſionally, till they gradually advance in growth, but by thus ſhifting them into pots a ſize larger, it admits of adding freſh earth, which proves highly beneficial to their growth.

Garden pots for the reception of plants are of ſeveral regular ſizes, from two to ſixty in a caſt, ſo are diſtinguiſhed at the pot-houſes accordingly, as twos, ſixes, twelves, ſixteens, twenty-fours, thirty-twos, forty-eights, ſixties, or ſixty-fours, &c. in each caſt; each pot having one or more apertures at bottom to diſcharge the ſuperfluous moiſture. They are ſold by the potters at ſo much per caſt, large and ſmall, all of a price; thoſe of only two in a caſt the ſame as thoſe of ſixty; and from two ſhillings to half a crown per caſt is the general price. See Pots.

But with reſpect to the particular method of Planting in pots in general, the following particulars are neceſſary to be obſerved.

Having the pots and mould ready for the reception of the intended plants, obſerve previous to planting them to place ſome pieces of tile, potſherds, or oyſter-ſhell over each hole at the bottom of the pots, both to prevent the holes being clogged and ſtopped with the earth, and the earth from being waſhed out with occaſional watering; alſo to prevent the roots of the plants getting out; then having ſecured the holes, put ſome earth in the bottom of each pot, from two or three to five or ſix inches or more in depth, according to the ſize of the pot, and that of the roots of the plant; this done, inſert the plant in the middle of the pot upon the earth, in an upright poſition, making its roots, if without a ball of earth, ſpread equally every way; directly adding a quantity of fine mould about all the roots and fibres, ſhaking the pot to cauſe the earth to ſettle cloſe thereto; at the ſame time, if the root ſtand too low, ſhake it gently up as you ſhall ſee occaſion; and, having filled the pot with earth, preſs it gently all round with the hand, to ſettle it moderately firm in every part, and to ſteady the upright poſture of the plant; raiſing the earth however within about half an inch, or leſs, of the top of the pot, it will ſettle lower; for ſome void ſpace at top is neceſſary to receive waterings occaſionally: as ſoon as the plant is thus potted, give directly a moderate watering, to ſettle the earth more effectually cloſe about all the roots, and promote their rooting more expeditiouſly in the new earth; repeating the waterings both before and after they have taken root, as occaſion requires.

In tranſplanting plants in pots from one pot to another, they may for the general be ſhifted with the whole ball of earth contained in the pot about their roots entire, ſo as to preſerve the plant all along in its growing ſtate, as ſcarcely to ſhrink or retard its growth by the operation of removal; which to plants growing ſingly in pots, and of ſome ſtanding, whoſe roots and fibres have eſtabliſhed themſelves firmly in the earth, they will readily remove out of the pots with the entire ball in one compact lump, ſurrounding all the roots and fibres, retaining their growing ſtate by ſtill drawing from the ſurrounding ball of earth.

The method of removing them out of the pots with balls, is generally eaſily effected to moſt potted plants. Sometimes it is performed by turning the pot mouth downwards, and ſtriking the edge againſt ſomething; the plant will come clean out, with the whole about all the roots entire. Or, ſometimes plants that are very well rooted, and its numerous fibres ſurround the outſides of the ball, it will often readily quit the pot by drawing it by the ſtem; or at leaſt, if raiſed a little from the ground, and ſtrike the edge of the pot or tub, the ball will often come out whole and compact. But if by either of the above methods the ball will not readily quit the pot, thruſt ſome narrow thin inſtrument of iron, ſuch as a long blade of a knife, &c. down round the ſides, as already hinted, the ball will then come out with much greater facility. Sometimes however large plants of ſome years ſtanding unſhifted, will by their encreaſed roots have ſo wedged themſelves, as to require the pot to be broken in order to preſerve the ball. And ſometimes large plants

in heavy tubs, ſuch as orange aad lemon-trees, require to be ſlung by the ſtems upon ſome temporary erection, to draw them out of the tubs with the ball entire.

Having however removed any plant with its ball for replanting in a larger pot, obſerve preparatory to Planting it, that as ſometimes the numerous fibres will have ſo ſurrounded the outſides of the ball, as to form a ſort of mat all around, it is proper to trim the groſſeſt of them off cloſe with a knife, all round the ſides and bottom; then having the pots of proper ſizes, larger than the former ones, and having ſecured the holes at bottom, and put in ſome freſh compoſt, depoſite the plant with its entire ball in the pot, minding that it ſtands erect, and juſt the proper depth; and fill up the interſtice all round the ball with more freſh mould, preſſing it down round the ſides with your hands or a ſtick, adding more mould gradually; and raiſe the whole about an inch over the crown of the ball, and finiſh with a moderate watering to ſettle the new earth cloſe in every part.

But in tranſplanting from one pot to another with balls, is in ſome caſes to be avoided; for example, if a plant appears diſeaſed or in a bad ſtate of growth, it is moſt probable the fault is in the root or earth; therefore in tranſplantation it is eligible to ſhake the whole entirely out of the earth, in order to examine its roots, and trim off all decayed and other bad parts; then, having a freſh pot, and ſome entire new compoſt, replant your tree, &c. therein, as already directed.

In potting plants from the full ground, or beds of earth, &c. that, if they have been previouſly pricked out at certain diſtances, and have ſtood long enough to fix their roots firmly, many ſorts may alſo be potted with balls, particularly moſt of the herbaceous, fibrous-rooted kinds, by taking them up carefully with a garden trowel, or with a ſpade, as may be moſt convenient; and, if neceſſary, pare the balls round to fit the pot, planting them as above.

Potting of ſeedling plants however immediately from ſeed beds, that, by their growing ſo cloſe together, rarely admit of potting with balls to their roots; ſo that when intended to pot ſuch, they muſt be drawn out of the earth with the root as entire as poſſible, and potted ſeparately in ſmall pots, ſhifting them occaſionally into larger, as before obſerved.

Sometimes in Pot-Planting, we, to ſave room, plant ſeveral plants in each pot, eſpecially when deſigned as nurſery pots, to receive either ſmall ſeedlings, off-ſets, ſlips, cuttings, &c. juſt to ſtrike them, and forward them a little at firſt, either in hot-beds, or for removing them to different ſituations, ſuch as occaſional ſhade, ſhelter, &c. but when ſuch ſeedlings are a little forwarded, or the off-ſets, ſlips, cuttings, &c. are properly rooted, and ſhoot a little at top, they ſhould be all potted off ſeparately, each in a ſeparate pot, eſpecially if plants of any duration; giving them ſmall pots at firſt, and as they encreaſe in ſize, ſhift them into larger pots accordingly.

When any large growing plants, ſuch as orange and lemon-trees, or any other kinds, are become too large for pots, they ſhould be ſhifted into tubs: theſe tubs ſhould be made of full inch-thick ſtaves, and adapted to the ſize of the reſpective plants; each tub well hooped with iron, and with two hooked iron handles at top, to receive poles between two men for moving the plants where occaſionally wanted; having holes at the bottom of the tubs to diſcharge the ſuperfluous moiſture, as obſerved for the pots; placing ſome ſtones, &c. to prevent the holes being clogged with the earth; the method of planting and tranſplanting being the ſame as in Pot-Planting.

In the culture of all plants in pots it is proper to ſtir the ſurface of the earth now and then an inch or two deep, to prevent its binding or becoming moſſy, and to promote the growth and health of the plants: likewiſe to ſuch as are not ſhifted annually, it is alſo proper to add a little freſh mould in ſpring and autumn, previouſly ſtirring the old at top as above, and a little way round the ſides; then taking out the old, replace it with an equal portion of freſh compoſt, finiſhing with a moderate watering; this will prove a very beneficial dreſſing to the plants, and give an air of neatneſs, and a more lively appearance to the whole.

In all plants in pots or tubs great care is requiſite in ſupplying them with water, which muſt be obſerved to moſt ſorts the year round, but more particularly in ſummer; for the earth containing the plant being limited to the compaſs of a ſmall pot or tub, it dries very faſt in hot weather, ſo muſt be often moiſtened accordingly; which to ſome plants may be requiſite three or four times a week in the ſummer ſeaſon; and to ſome ſorts in ſmall pots every day, or even twice a day in very

very dry ſcorching weather: but as the autumn and cold ſeaſon advances, give the waterings more ſeldom and ſparingly; and in winter, plants that are expoſed abroad in pots rarely require any water at all; but thoſe in the green-houſe or other place of ſhelter muſt be watered occaſionally alſo during the winter; ſome probably once a week, or ten or twelve days, ſuch as all the woody kinds; others but once a fortnight or month, particularly the ſucculent kinds; and ſome of the more tender very ſucculent ſorts will require very little moiſture at any time, but eſpecially in winter; being careful however always to water all ſorts in pots moderately in this ſeaſon of the year, and let it always if poſſible be done in ſunny days, and give very little in froſty weather: at no time give too much to render the earth miry wet in winter, which would prove the deſtruction of moſt tender exotics; all that is neceſſary is to preſerve the earth very moderately moiſt. Potted plants in hot-houſes however will require more frequent ſupplies of water in winter than any other plants in pots.

To potted plants in general we muſt occaſionally examine that the holes at bottom are ſufficiently open to diſcharge the ſuperfluous moiſture from occaſional waterings, &c. for if theſe are clogged up, and detain the moiſture, the conſequence will be bad, for it will rot the fibres, and even the main root, and ſoon bring on the decay of the whole plant; however by turning up the bottom of the pot, the holes if ſtopped are eaſily cleared with the end of a ſtick or other inſtrument.

### *Other general Obſervations of Tree Planting in particular.*

Having exhibited above the various methods of performing the mechanical operation of Planting, we will next give ſome hints with reſpect to the preparation of plants previous to Planting, particularly of tree Planting, which being of the greateſt importance, ſhall firſt exhibit ſome general remarks on that head.

In the firſt place obſerve, with reſpect to Planting trees of all kinds, that it is of conſiderable importance to give them their final tranſplantation whilſt they are young, i. e. from about two or three to ſix or ſeven years old, and when of from about two or three, to ſix or ſeven feet ſtature; eſpecially for all kinds of fruit-trees and foreſt-trees for long duration; as at the above ages and ſtatures they will eſtabliſh themſelves ſooner and more firmly in the ground than trees of more conſiderable age and growth, and in the end make the moſt proſperous and durable trees.

Note, however, trees ten, fifteen, or twenty feet high are occaſionally tranſplanted, eſpecially ſome deciduous foreſt and ornamental trees in particular caſes; in forming ornamental plantations, where perſons are in haſte to have any part thereof appear conſpicuous as ſoon as poſſible, or to afford immediate ſhade or ſhelter, as to form blinds to any particular compartment.

But there are many ſorts of trees and ſhrubs of eight, ten, or twelve feet ſtature, both deciduous and evergreens, that may be readily tranſplanted with tolerable ſucceſs; as, if taken up with a good ſpread of roots, they will take root freely, and often aſſume a good free growth; theſe ſizes however are more proper to be employed occaſionally in ornamental plantations, to exhibit immediate ſhew, than for any general plantations of fruit and foreſt-trees.

And as to trees of fifteen or twenty feet height or more, although they may on particular occaſions in ornamental works be tranſplanted, by care in removing them with a good compaſs of roots, or ſometimes with balls, as may occaſionally be practiſed to ſuch in particular that happen to grow on graſs ground; and are not to be removed to any great diſtance; yet the tranſplantation of theſe large trees ſhould not be attempted for any general purpoſe, but only in caſes where a few trees may be required to form an immediate ſhew in ſome particular compartment, or to form preſent ſhade, ſhelter, or blind, as aforeſaid, till younger trees grow up; for they rarely eſtabliſh their roots like younger growth, but often aſſume a ſtunted habit, and frequently after a few years dwindle gradually off; ſo that when ſuch are employed, it is proper to have ſome younger trees near them to be advancing as ſubſtitutes if any of the others ſhould fail.

However, for any general plantations, either of fruit-trees, foreſt-trees, or ornamental trees and ſhrubs, let them be compoſed principally of young plants from about two or three to ſix or eight feet height, as theſe ſizes will be found to root more expeditiouſly and effectually, as well as ſhoot more freely at top than large tranſplanted trees, and ſooner attain a ſtate of perfection.

But foreſt-trees in particular, that are intended principally for timber plantations, it is moſt eligible to plant them out finally when

from two to four or five feet high, that they may eſtabliſh their roots firmly in their minor ſtate, which is of conſiderable importance in promoting a flouriſhing and durable growth, ſo as they may ſooner attain a great ſtature and magnitude.

In the work of Planting trees, &c. the choice of them in the nurſery for furniſhing the reſpective plantations ſhould be particularly attended to; that, whether in your own ground, or in the public nurſeries, always chuſe the ſtraiteſt, moſt vigorous, and thriving plants of the reſpective kinds.

Likewiſe in preparing for Planting, obſerve that in taking up the trees for that purpoſe out of the nurſery, the greateſt care is neceſſary in raiſing them with as great a ſpread of roots as poſſible; which however is often ill attended to, eſpecially when large orders of plants are to be drawn in a hurry. The ground about the trees ſhould always be opened with the ſpade widely round the roots, and deep enough to get to their bottom without hacking and cutting them with the ſpade, but ſo as to raiſe each plant with all its roots as entire as poſſible, for this is of much importance in the future proſperity of the trees and ſhrubs.

After having taken up the trees out of the nurſery, &c. it is of great moment to have them replanted as ſoon as poſſible in the places allotted for them; for, although by properly covering the roots with litter, or, if ſent to any conſiderable diſtance, that by tying them in bundles, and packing them up with plenty of ſtraw about the roots, and afterwards cloſely matted round, they may be preſerved in tolerable good condition a fortnight or longer; yet where it is poſſible to plant them the ſame day, or in a day or two after, before the ſmall fibres are ſhrunk or dried, it will be of much advantage in the firſt growth of the trees; obſerving however, after trees or ſhrubs are taken up in order for Planting, and that either the ground not being ready, or any other hindrance prevents their being planted ſoon after, they ſhould as ſoon as poſſible be depoſited in a trench of earth by the roots, which gardeners call *laying them by the heels*, and ſo take them out as they are to be planted.

Next with reſpect to preparing the trees for planting, after being drawn out of the nurſery.

In the firſt place with regard to the root; this part muſt have an occaſional trimming, not however to retrench or reduce any but the maimed and decayed parts; therefore previous to planting each tree, examine the root, and cut out all ſuch parts as have been broken or damaged in taking up, and all decayed parts and other blemiſhes, being careful to leave all the ſound roots every where entire; leaving alſo all the ſmall fibres that are freſh and vigorous, and only trim off ſuch as are become dry and mouldy; ſuffering all the main roots to remain, moſtly at full length, except juſt to tip off their ends a little on the under ſide, ſloping outward; and reduce any very long ſtragglers, and ſhorten long perpendicular tap-roots, more particularly of fruit-trees, to prevent their running down into a bad ſoil, and promote their throwing out others horizontally into the good earth.

Some perſons however make it a rule to retrench or thin the roots of tranſplanted trees very much, and ſhorten them alſo very conſiderably; but it will be found that trees planted with all their ſound roots, will be the moſt proſperous in growth; for the reducing the roots with too much ſeverity, greatly weakens the tree; and, as every one muſt know, that all plants and trees receive invigoration, and their moſt eſſential nouriſhment from the roots and fibres, ſo that it is certainly an act of high imprudence to deſtroy the roots of any tree that are good and ſound in every reſpect, and wait a conſiderable time for new ones, when we are actually poſſeſſed of a ſufficiency that are good; it is therefore conſequently the ſafeſt way to leave all the good roots, and only retrench blemiſhed and decayed ones, as already obſerved.

And with regard to the preparation of the head of the trees previous to Planting, the principal care is to trim off ſtraggling ſhoots and branches from the ſtem, leaving the head for the generality intire, only juſt retrenching very irregular branches, and ſhortening any very long ſtragglers; and always ſuffer the main or leading top ſhoot to remain at length, to aſpire in height as faſt as poſſible, particularly foreſt-trees, and all others that we deſign ſhall grow to a lofty ſtature, for in this conſiſts their beauty and worth.

With reſpect to fruit-trees however, ſometimes a more accurate regulation of the head preparatory to Planting may be requiſite, more particularly dwarfs for eſpaliers and walls. For example, if the fruit-tree is taken from the nurſery at one year old from the budding and grafting, and with its firſt ſhoot from budding and grafting entire; this firſt ſhoot muſt neceſſarily be ſhortened or headed down

down to force out lateral wood to furniſh the bottom properly; but obſerving this heading down is not neceſſary at the time of Planting, and is moſt eligible to plant the tree with its ſaid firſt head entire, to remain till ſpring, until the tree has taken freſh root and begins to ſhoot; for the head remaining will greatly promote the rooting: then in March or beginning of April, the tree having taken root, as you will obſerve by its effort for ſhooting at top, head it down within half a foot, or five or ſix eyes of the inſertion of the bud or graft, and the ſhoot ſo headed will throw out ſeveral lateral branches the enſuing ſummer.

On the other hand, if the fruit-tree is two, three, or more years old from the budding and grafting, and the firſt ſhoots headed down in the nurſery at the proper time, and that in conſequence thereof, produced ſeveral lateral ſhoots, to give the head its firſt formation; or even if the tree has ſtood long enough to form a good full head, it is proper in both caſes to plant it with its whole head entire; only retrenching any irregular branch, or any very luxuriant ſhoot; or thin out the worſt of ſuch as are evidently too cloſe or crowded, leaving however all the regular branches, ſuffering them to remain alſo at full length, except juſt to reduce any very long rambler conſiſtent with the extent of the other branches.

For in new Planting trees it is very improper to retrench the branches too ſeverely, and cut all that remains ſhort, as is very often practiſed in tranſplantation, on a ſuppoſition to ſtrengthen their roots, which however has often the contrary effect; for the branches and leaves imbibe the refreſhing influence of the air, &c. which, being conveyed to the roots, proves nutrimental, and contributes exceedingly towards vegetation, and conſequently promotes the rooting afreſh more expeditiouſly and effectually; and until this is well effected the tree will make but little progreſs in its top growth.

Beſides, by a ſevere retrenching, and a general ſhortening, of fruit-trees in particular, they cut off the very parts where fruit would have been ſoon firſt produced; and probably coſt the tree two or three years growth to furniſh new branches equal to thoſe cut away, as well as retard its bearing in proportion. And it often happens by ſuch a general amputation of the branches of all new planted trees at the time of Planting, they, for want of branches to collect vegetative nouriſhment, either make very little progreſs in ſhooting for two or three years after; or ſometimes when they do ſhoot, throw out a profuſion of unneceſſary wood from the remaining eyes or buds.

For, as we formerly obſerved, that although ſhortening the branches of fruit-trees in particular is ſometimes proper in young trees of one or two years old from budding or grafting, to force out a ſupply of lateral wood to furniſh the firſt regular formation of the head, more particularly dwarfs for eſpaliers and walls; yet if you are about to tranſplant the tree, and the operation of heading being neceſſary as above, it ought not to be done till after the tree is planted, and has began to take root and make an effort for ſhooting in March or April; for when headed down at Planting, they, for want of the head, rarely either ſtrike root or ſhoot at top ſo freely.

Therefore if fruit-trees at Planting, whether dwarfs or ſtandards, are furniſhed with five or ſix or more good regular branches, of one, two, or more years growth, it would be a great pity to retrench them, and diſfigure the tree, either on the conſideration of ſtrengthening it, or to force out more branches; particularly apples, pears, plums, and cherries, which ſhould at all times be but ſparingly ſhortened; and ſince ſeveral good branches being already obtained in the proper parts, to give the head its firſt regular form, they will in their turn readily furniſh more; and if there is a vacancy in any part, it will be better to endeavour to fill it by ſtopping ſome of the young ſhoots produced the ſummer after Planting, by either pinching them in May or June the ſame year to three or four eyes, or cut them down to that length in winter or ſpring following.—Some fruit-trees however, ſuch as peaches, nectarines, &c. againſt walls, require moſt of their young ſhoots to be ſhortened annually.—But for more particulars of all the ſorts, ſee their reſpective genera.

Standard fruit-trees, when deſigned they ſhall form ſpreading heads, branching out near the top of the ſtem regularly all around, they, if grafted high in the ſtem, muſt, like the dwarfs, have alſo the firſt ſhoot from the budding or grafting, headed down to four or five eyes, to force out a ſet of lateral branches near the inſertion of the bud or graft; or, if the grafting and budding was performed near the ground, and the firſt ſhoot trained to a proper height for a ſtem, it is alſo topped at the deſired height, to throw out a ſupply of lateral branches each way, near the head of the ſtem, as above ſaid; but ſometimes when the firſt heading,

in either of the above methods, does not furniſh a proper ſupply of branches to give the head its firſt proper formation, a ſecond heading is occaſionally performed the next ſpring, upon the ſhoots produced from the firſt; obſerving, however, that all the above works of heading ſtandard fruit-trees, in particular, ſhould always be performed in the nurſery a year or two, or more, previous to final tranſplantation into the garden or orchard, that the trees may be furniſhed with ſeveral regular branches to form a head, at the time of Planting; and, as before obſerved, it is proper to plant it with all its ſaid head entire; except reducing ſuch irregular growths as already mentioned, ſo leaving all the regular branches at their length, ſuffering the whole to ſhoot up, and branch away in their own way; and they will annually advance in length, and gradually furniſh laterals to fill and ſpread the head proportionably.

But remarking particularly that ſtandard-fruit-trees, having been previouſly headed in the nurſery a year or two or more before, and in conſequence are now furniſhed with ſeveral regular branches of one, two, three, or more years growth, they ſhould on no conſideration be either retrenched or ſhortened, neither at Planting nor afterwards, for the reaſons before given; and alſo that as moſt fruit-trees begin to bloſſom and bear firſt towards the upper parts of the branches, more particularly apples, pears, plums, and cherries, which always produce their fruit upon ſhort ſhoots called *ſpurs* or *fruit-buds*, that moſtly riſe firſt towards the ends of the branches; but which in this ſhortening would all be cut away, and retard the bearing two or three years, beſides all the other diſadvantages above mentioned.

But when ſtandard fruit-trees are required to aſpire more conſiderably in height, rather ſomewhat pyramidal, or conic ways, than horizontally; no heading at all ſhould be practiſed, neither in the nurſery, nor at the time of final Planting; but the whole, quite from the budding or grafting, ſuffered to remain entire, and ſhoot up, and branch according to nature; and they will naturally form a regular head. Some ſorts ſpherically, others more of the pyramidal, or conic figure.

As to foreſt-trees, &c. their preparation, previous to Planting, after being drawn out of the nurſery, is only to trim the blemiſhed roots, as before obſerved; and prune off all branches from the lower part of the ſtem, cutting them to about from three to five or ſix inches, particularly the deciduous kinds, leaving the head always tolerably branchy, and moſtly entire; not to trim away all the branches to one leading ſhoot only, as is often practiſed; but leave a proportionable ſhare of the upper more erect branches, to form ſome head, and only juſt retrenching the lower ſtragglers, very long rambling luxuriants, and very irregular growths, juſt to preſerve a little regularity; being particularly careful to leave always the top or leading ſhoot perfectly entire; unleſs it is decayed, or is very crooked, bending much downwards, &c. in which caſes, if any ſtraight ſhoot is conveniently ſituated, the crooked part may be retrenched down to the ſtraight ſhoot, which leave entire to run up in height; as without a leader a tree can never aſpire to any conſiderable ſtature: for the leader, by its annual erect ſhoot, gradually encreaſes the length of the ſtem, and as it advances, ſends out a ſupply of laterals to furniſh the head, branching and ſpreading in proportion, according to the natural growth of the reſpective ſorts.

But in Planting tall trees, where deſigned to form ſhade, ſhelter or blinds, as ſoon as poſſible, very little reduction of the branches of the head may be neceſſary, only to reduce any very irregular growers.

However, in removing pretty large trees of any ſort, with conſiderable heads, eſpecially of a very ſpreading or crowded nature, it may be proper to reduce the whole regularly, both in ſome proportion to the root, and that the winds may not have too much power to incommode it after Planting; in which caſes, it may be neceſſary, as juſt above obſerved, to retrench, or reduce ſome of the moſt extenſive lower branches; thin out ſome where much crowded, and reduce others down to ſome convenient lateral branch they may ſupport; ſo as each reduced branch may, notwithſtanding its reduction, terminate in a leader, having its top entire, not to exhibit naked ends of branches, ſtanding up like ſtumps. Obſerving, however, in ſuch large trees, that the above reduction ſhould be ſo judicious, as the remaining branches may ſtill exhibit a moderately full, and ſomewhat regular head.

With reſpect to the preparation for Planting of all the ſhrub kind, only juſt trim ſtraggling under-branches and ſhoots from the lower part of the ſtem; retrench luxuriants of the heads that ſeem to ſhoot away very irregularly

regularly and vigorouſly, at the expence of the neighbouring branches; and reduce long ramb'ers, &c juſt to preſerve a little regularity.

All new planted tall trees, ſhould generally be ſtaked as ſoon as planted, in order to ſupport them ſteady every where, till well rooted, and have ſomewhat eſtabliſhed their roots, that tempeſtuous winds may not overſet, or otherwiſe incommode them; particularly all trees of ſix or ſeven feet high, and upwards. One tall ſtout ſtake to each tree, or more, if the trees are of large ſize, ſharpening the lower ends, and drive them firmly into the ground near the ſtem; or, if larger trees, place it ſlant-ways, at a little diſtance, ſo as its top reach the upper part of the ſtem, on the oppoſite ſide to that moſt expoſed to the winds, in which it will have the greateſt effect; but large trees, with full heads, ſhould generally have very tall ſtrong ſtakes, three to each tree, placed triangular ways, alſo in an oblique or ſlanting direction. Having, however, fixed the ſtakes in either of the methods, as the trees ſhall require, then directly proceed to bind the ſtem of the trees firmly to the ſtakes, previouſly wrapping ſome ſoft ſubſtance, ſuch as hay-bands, &c. round the ſtem, at the part where it is to be faſtened to the ſtakes, in order to ſave the bark from being rubbed off againſt the ſtakes, by the motion of the winds: and this is more particularly neceſſary to tall plants that are much expoſed. Having ſome ſtrong bandages, ſuch as rope-yarn, or the like, or for ſmaller plants ſome tough oſier or other withies, then bringing the ſtem and ſtakes cloſe, ſo as to preſerve ſtill the erect poſition of the plant, bind them firmly together, by drawing the bandage round the ſtakes, and about the ſtem, over the hay wrapping, if any, and faſten it ſo ſecurely, as to admit of no motion between the ſtake and ſtem of the tree.

But large trees, of ſome conſiderable ſtature, with full heads, are often ſupported alſo with ropes ſuſpended from the top of the ſtem, three different ways, ſtraining them tight, and the end of each rope ſtaked ſecurely down to the ground; ſo that, whatſoever way the wind blows, the ropes will ſtay the tree ſtill in its upright poſition.

Such new planted trees as are expoſed to cattle, ſhould each be well fortified all round the ſtem with thorn buſhes.

The general Planting ſeaſon, for all ſorts of trees, is, autumn and ſpring, i. e. the autumnal Planting being from the beginning of the decay of the leaf, in October, until December; though ever-greens may be begun to be tranſplanted towards the middle or latter end of September, and continued till December aforeſaid. And for the ſpring Planting, February and March is the principal time, but may be continued occaſionally until April; and ſeveral ſorts of tender young ever greens ſucceed beſt when planted the beginning of that month.

However, to thoſe perſons that have much Planting or other buſineſs in hand, I would obſerve, that Planting need not be confined particularly to autumn and ſpring; for all hardy kinds, both fruit-trees, foreſt-trees, ſhrubs, &c. may be planted occaſionally, almoſt any time, in open weather, from October till March, eſpecially in all moderately dry ſoils, with good ſucceſs.

Planting, however, forward in autumn, is of ſome advantage, as the trees will have time to root more firmly, ready for the enſuing ſpring ſhoot, as well as be able to ſtand the drought of ſpring and ſummer ſomewhat better than thoſe planted later.

But in very humid ſoils, where water is apt to follow the ſpade in winter, it is eligible always to plant forward in autumn, or not till ſpring; but rather principally the laſt mentioned ſeaſon, toward the latter end of February, or in March.

*Farther Obſervations, particularly in Planting herbaceous Plants.*

In preparing to plant herbaceous fibrous-rooted plants, our firſt principal care is to remove them, with good roots: young ſeedlings, &c. eſpecially require particular care in drawing them with proper roots. When they are to be taken all clean up, they may be readily looſened and raiſed out of the earth with ſome inſtrument, with all their fibres entire; but when they are only to be thinned, they do not admit of this, becauſe it would diſturb the remaining plants, ſo muſt be drawn out by hand carefully, with as much root as poſſible.

Many ſorts of fibrous-rooted plants, however, being ſo hardy, and apt to grow, that if taken up almoſt any how, with a little root, they will often ſtrike: it is nevertheleſs adviſeable to uſe care in drawing all ſorts for Planting, with tolerable roots, as they will in proportion make more progreſs in their future growth. And as to any trimming preparatory to Planting, very little is wanted,

only

nly in ſome ſorts, juſt ſhortening very long naked ſpindly roots, and trimming any ſtraggling fibres; though in numbers of plants of this tribe hardly any trimming at all is required, neither in root nor top; all of which however you will be able to regulate according to obſervation, agreeable to the hints here exhibited, and in the culture of the reſpective articles.

The moſt commodious and expeditious mode of Planting herbaceous ſeedlings, ſlips, offſets, cuttings, &c. is by dibble, as already obſerved in *Planting by Dibble*; and for ſuch as have been previouſly pricked out in nurſery-rows, many ſorts may be drawn with little balls, when required, and holed-in with a trowel, eſpecially numbers of the choiceſt flowery tribe; but almoſt all ſorts of pricked-out herbaceous fibrous-rooted plants may either be drawn with full roots, and planted by dibble, or with balls of earth, and holed in by trowel, as ſhall ſeem moſt convenient according to the nature of the plants.

Many ſorts of fibrous-rooted plants may be planted out at once, where they are finally to remain, particularly all long ſpindly-rooted kinds; likewiſe numerous others of the more fibrey-rooted ſorts may alſo be planted out finally from the ſeed-bed, provided the ground is ready for their reception; yet I would obſerve when the ground is not ready to receive them for ſome conſiderable time, it will be eligible to thin-out a quantity from the ſeed-bed, and prick them in nurſery rows five or ſix inches aſunder, to remain a month or ſix weeks or longer, till the ground is ready for their reception, whereby they will acquire good roots, and a robuſt firm growth, in order for final tranſplantation; whereas when they all remain long in the ſeed-bed, they by ſtanding ſo cloſe, draw each other up very ſlender and weak, and never make near ſo good plants as thoſe previouſly thinned and pricked out at ſmall diſtances; which, after growing a month or two in nurſery rows, will all readily riſe with full roots for final Planting, and many ſorts alſo with good balls of earth where neceſſary, which may be more particularly requiſite to ſome of the choice, flowery tribe.

The ſeaſon for Planting moſt herbaceous fibrous-rooted plants is any time in ſpring, ſummer, and autumn, according as they may be required for different purpoſes, as is always hinted in the culture of the various ſorts; and many hardy kinds even in winter, in mild open weather, when occaſionally wanted; for moſt of this tribe of plants readily and expeditiouſly take root at almoſt any ſeaſon, in mild weather; chuſing generally moiſt weather in ſpring and ſummer, but eſpecially from April until September; and chiefly dry weather for winter Planting: obſerving likewiſe in the ſpring and ſummer Planting, it is proper always to give a moderate watering as ſoon as planted, but eſpecially in ſummer, unleſs it ſhould happen to rain hard enough to deſcend to the roots; otherwiſe a little water to ſettle the earth cloſe to the roots is of very eſſential ſervice.

As to Planting herbaceous bulbous-rooted plants, ſuch as hyacinths, narciſſus, tulips, and all others of the bulbous tribe, they ought never to be removed but only in ſummer, when their ſtalks, leaves, and fibres of the bulbs decay; for theſe parts of bulbous plants always decay annually in ſummer, ſoon after they have flowered and ripened ſeeds; but the bulbs themſelves are perpetuated; ſo that the above period is the time either to plant out ſeedlings of theſe ſorts previouſly into nurſery-beds for two or three years or more, to acquire a proper age and ſize for flowering, then tranſplanted finally: it is alſo the proper period for tranſplanting full-grown bulbs, either from one place to another directly, or take them up to keep for autumn and ſpring Planting.

All bulbous-rooted plants taken up at the above time of the decay of the ſtalks, leaves, and fibres, may either be planted again directly, or kept till September, October, or November, and then planted; which for the choiceſt ſorts is the moſt eligible practice, as obſerved in their culture: and in order to have a late bloom a few may alſo be retained out of ground till ſpring, about January or February; but plant the principal always in autumn, about October and November.

Bulbous plants are planted two or three different ways, as by dibble, by drilling-in, and by bedding-in. See each of theſe methods as exhibited ſeparately under this article PLANTING.

Chuſe always dry weather for Planting moſt kinds of bulbs, eſpecially all the choice kinds.

PLATANUS, Plane Tree.

This genus conſiſts of lofty deciduous trees, of high repute for their ſingularly beautiful growth and luxuriant foliage; being delightful trees for all ornamental plantations, and for affording ſhades; alſo as foreſt or timber-trees, they growing remarkably ſtrait to a conſiderable height and magnitude; adorned with

with very large ſimple, palmated and lobated leaves, from ſix to twelve or fourteen inches broad, but very ſmall monoeceous flowers, collected into cloſe globular heads, ſucceeeded by numerous ſeeds, digeſted into large round rough balls.

Claſs and order, *Monoecia Polyandria.*

*Characters.*] CALIX, male and female, very ſmall flowers; apart on the ſame plant, the male florets digeſted into globular katkins, having very ſmall cups; and females collected into a large roundiſh ball, having very ſmall ſcaly calixes. COROLLA in the males is ſcarcely diſcernible, and in the females each floret having many ſmall concave petals. STAMINA, numerous, ſmall, oblong, coloured filaments, having four-cornered antheræ. PISTILLUM, ſeveral ſubulated *germina*, having ſubulated ſtyles, and recurved ſtigmas. PERICARPIUM, none, numerous roundiſh ſeeds, ſurrounded with down, and collected into round hard balls.

There are only two real ſpecies; which, however compriſe ſome varieties, all of which are deciduous, and of hardy growth.

The ſpecies are,

[1]PLATANUS *Orientalis.*

*Oriental or Eaſtern Plane Tree.*] Riſes with a very ſtraight, ſmooth, branching ſtem, to a great height; palmated leaves, ſix or eight inches long, and as much broad, divided into five large ſegments, having the ſide ones cut into two ſmaller, green above, and pale underneath; and long pendulous pedunculi, each ſuſtaining ſeveral round heads of cloſe-ſitting, very ſmall flowers; ſucceeded by numerous downy ſeeds, collected into round, rough, hard balls.

It is a native of Aſia, and many parts of the Eaſt, and grows in great plenty in the Levant.

[2]PLATANUS *Occidentales.*

*Occidental or Weſtern Plane Tree.*] Riſes with a ſtraight ſmooth ſtem, to a great height, branching widely around; lobated leaves, ſeven or eight inches long, and from nine or ten, to twelve or fourteen broad, divided into three large lobes; and very ſmall flowers, collected into round heads, ſucceeded by round, rough, balls of ſeed.

It is a native of Virginia, and other parts of North America; where it attains an enormous ſize, and is remarkable for having its ſtem all of an equal girt for a conſiderable length; and we have an account of ſome trees being eight or nine yards in circumference, and when felled, afforded twenty loads of wood.

Varieties of theſe two ſpecies, are,

*Spaniſh or middle Plane Tree.*] Having remarkably large leaves of three or five narrower ſegments.

*Maple-leaved Plane Tree.*] Having ſmalleſt leaves, ſomewhat lobated into five ſegments; reſembling the maple-tree leaf.

All theſe elegant trees are of hardy temperature; ſo as to proſper here in any common ſoil, and expoſure in our open plantations, &c. and are ſome of the moſt deſirable trees of the deciduous tribe; were in ſingular eſteem among the ancients of the Eaſt, for their extraordinary beauty and delightful ſhade they afforded, by their noble foliage.

The leaves commonly expand in May, and fall off early in autumn; and the flowers appear in ſpring, a little before the leaves, being ſucceeded by ſeeds, which, in fine ſeaſons, frequently ripen here in September.

As to the uſes of theſe fine trees in gardening; they have ſingular merit for all ornamental plantations; their ſtraight growth, regular branching heads, and lofty ſtature they attain, together with the extraordinary breadth of their luxuriant leaves, render them extremely deſirable furniture to adorn avenues, lawns, parks, and woods; ſome diſpoſed in ranges; ſome as ſingle ſtandards; others in clumps; ſome in groves, &c. and are moſt excellent for ſhade; for it is obſervable, that no tree is better calculated to defend us from the heat of the ſun in ſummer, by its noble ſpreading foliage, and to admit the ſun's rays more freely in winter, on account of the diſtance of its branches, which is always in proportion to the ſize of the leaves.

They may alſo be employed in the collection of foreſt trees, in woods, to grow up to timber, in which they will alſo prove advantageous in time.

In ſhort, theſe noble trees claim the eſteem of every one concerned in plantations of every kind; but more particularly in extenſive works, where they may be ſo variouſly diſpoſed, as to have a charming effect.

*Their Propagation.*

The propagation of theſe trees, is by ſeed, layers, and cuttings.

By Seed.—The ſeeds frequently ripen in theſe parts, and are alſo procured from other countries, and may be obtained of the nurſerymen, or ſeedſmen; obſerving, the beſt ſeaſon for ſowing them is autumn, if they can be then poſſibly procured. Chuſing a ſomewhat ſhady moiſt ſoil; and having dug the ground, and raked it fine, form it into four-feet wide beds, and either ſcatter the ſeeds evenly on the ſurface, and rake them in, or, previouſly with the back of a rake, turn the earth off the ſurface near half an inch deep into the alleys; then ſow the ſeed, and directly, with the rake turned the proper way, draw the earth evenly over the ſeeds, and trim the ſurface ſmooth; many of the plants will riſe in ſpring, and probably may not till the ſpring following. When they are one or two years old, plant them out in nurſery rows, two or three feet aſunder, and about half that diſtance in the lines; here to remain till of a proper ſize for final tranſplantation.

By Layers.—This method of propagation is very commonly practiſed in the nurſeries, in default of ſeed, and by which they moſt readily grow; for which purpoſe, ſome ſtout plants for ſtools muſt be planted, which in a year after muſt be headed down near the bottom, that they may throw out many ſhoots near the ground, convenient for laying; which, in the autumn after they are produced, lay by for ſlit-laying; and by autumn after, they will be well rooted, and form plants two or three feet high, ſo may be ſeparated, and planted in nurſery rows, like the ſeedlings.

By Cuttings.—All the ſorts will take tolerably by cutting off the ſtrong young ſhoots; but the *Platanus Occidentalis* more freely than the Oriental kind. Autumn is the beſt ſeaſon; as ſoon as the leaf falls, chuſing ſtrong young ſhoots, and plant them in a moſt ſoil; many of them will grow, and make tolerable plants by next autumn.

It ſhould be remarked, that in order to continue the diſtinction of the varieties more effectually, they ſhould be propagated either by layers or cuttings: for when raiſed from ſeed, thoſe of the reſpective ſpecies generally vary.

PLEASURE-GARDEN, or Pleaſure-ground.

The diſtrict commonly called the Pleaſure-ground, may be ſaid to comprehend all ornamental compartments, or diviſions of ground and plantation, ſurrounding a noble ſite, conſiſting of lawns, plantations of trees and ſhrubs, flower compartments, walks, pieces of water, &c. whether ſituated wholly within the ſpace generally conſidered as the Pleaſure-garden, or extended over ha-ha's to the adjacent fields, parks, paddocks, or other out-grounds.

In deſigns for a Pleaſure-ground, according to modern improvements, conſulting rural diſpoſition, in imitation of nature, all too formal works being almoſt aboliſhed, ſuch as long ſtraight walks, regular interſections, ſquare graſs plots, correſponding parterres, quadrangular and angular ſpaces, incloſed with high clipped hedges, &c. and other uniformities, as in ancient deſigns; and inſtead of which, conſiſts now of rural open ſpaces of graſs ground, of irregular dimenſions, and winding walks, all bounded with plantations of trees, ſhrubs, and flowers, in various irregular clumps, and other compartments, exhibited in a variety of curves, projections, openings, and cloſings, in imitation of a natural aſſemblage; not forming incloſures of hedges, &c. but having all the various plantations open to the walks and lawns; for example: a ſpacious open lawn, of graſs ground, being generally firſt preſented immediately on the front of the manſion, or main habitation, having each ſide embelliſhed with plantations of ſhrubbery, groves, thickets, &c. in clumps and other compartments, in irregular curves, and projections, towards the lawn, &c. with breaks or opens of graſs ſpaces at intervals, between the plantation; together with ſerpentine gravel-walks, winding under the ſhade of the trees; irregular plantations, being alſo carried round next the outer boundary of the ground, in various openings and cloſings, having gravel-walks, winding through them, for ſhady and private walking; and in the interior diviſions of the ground is exhibited ſerpentine winding walks, and elegant graſs opens, arranging various ways, all bordered with ſhrubberies, and other tree and ſhrub plantations, flower compartments, &c. diſpoſed in a variety of irregular forms and dimenſions, in eaſy bendings, concaves, projections, and ſtraight ranges, occaſionally; with intervening breaks or opens of graſs ground, arranging irregularly between the compartments of plantations, &c. both to promote rural diverſity, and for communication and proſpect to the different

diviſions; all the plantations being ſo artfully arranged, as gradually to diſcover new ſcenes, each furniſhing freſh variety, both in the form of the deſign in different parts, as well as in the diſpoſition of the various trees, ſhrubs, and flowers, and other ornaments and diverſities.

So that in deſigns for a Pleaſure-ground, according to modern gardening, a tract of ground of any conſiderable extent may have the proſpect varied and diverſified exceedingly, in a beautiful repreſentation of art and nature, as that in paſſing from one compartment to another, ſtill new varieties preſent themſelves in the moſt agreeable manner; and even if the figure of the ground is irregular, and its ſurface have many inequalities, in riſings and fallings, and other irregularities; the whole may be improved without any great trouble of ſquaring and levelling, for by humouring the natural form, may cauſe even the very irregularities to conceal their natural deformities, and carry along with them an air of diverſity and novelty.

In theſe rural works, however, we ſhould not aboliſh entirely all appearance of art and uniformity; for theſe, when properly applied, gives an additional beauty and peculiar grace to all our natural productions, and ſets nature in the faireſt and moſt advantageous light.

But ſome of our modern Pleaſure-gardens, in which rural deſign is copied to an extreme, are often very barren of variety and entertainment, as they frequently conſiſt only of an extenſive graſs lawn, like a great field, having a running plantation of trees and ſhrubs all round, juſt broad enough to admit of a gravel walk, winding through it in the ſerpentine way, in many ſhort twiſts and turns, and bordering at every turn alternately upon the outward fence and the lawn; which are continually obtruded upon the ſight, exhibiting the ſame proſpect over and over, without the leaſt variation, ſo as that after having traverſed the walks all round this ſort of Pleaſure-garden, we find no more variety or entertainment than at our firſt entrance, for the whole having preſented itſelf at once at the firſt view; and we might often ſee as good a garden, ſometimes in a common field, that is bordered with any kind of plantation.

Therefore, in laying out a Pleaſure-garden, the deſigner ought to take particular care that the whole extent of his garden, be not taken in at one view; only exhibiting at firſt a large open lawn, or other ſpacious open compartment, or grand walk, &c. terminated on each ſide with plantations of curious trees, ſhrubs, and flowers, in compartments, exhibiting only ſome opens at intervals; and behind theſe have compartments of the like plantations, with graſs opens, gravel-walks, water, and other ornaments; ſo that a ſpectator will be agreeably ſurpriſed to find what terminated his proſpect, was an introduction to new beauties and variety.

But it is impoſſible to exhibit any regular directions for planning a Pleaſure-garden, agreeable to the prevailing modern deſign in imitation of nature aforeſaid; as the plan may be varied exceedingly, according to the natural figure, poſition, and ſituation of the ground and taſte of the deſigner; ſo we can only give ſome general hints.

*General Sketch of the Deſign.*

Take, however, the following general ſketch, which may be varied according to the ſituation and extent of the ground.

With reſpect to the ſituation; this muſt conſequently be immediately contiguous to the main houſe, whether high or low ſituated; remarking, however, that a ſomewhat elevated ſituation, or the ſide or ſummit of ſome very moderate riſing ground, is always the moſt eligible on which to erect the chief habitation, arranging the Pleaſure-garden accordingly; ſuch an expoſure being the moſt deſirable, both for the beauty of the proſpect, and healthfulneſs of the air; a low level ſituation, neither affording due proſpect of the garden, nor adjacent country, beſides being liable to unwholeſome dampneſs, and ſometimes inundation in winter: there are, however, many level ſituations, forming plains or flats, that poſſeſs great advantages both of ſoil and proſpect, and the beauties of water, without too copious moiſture; there are alſo ſometimes large tracts of ground, conſiſting both of low and high ſituations, as level plains, hollows, eminences, and declivities, and other inequalities, which may be ſo improved, as to make a moſt deſirable ſpot for a Pleaſure-garden, as the ſcene may be varied in the moſt beautiful manner imaginable. However, the choice of ſituation and ſcope of ground is not always attainable, ſo every one will regulate his plan in the moſt commodious manner poſſible, agreeable to the above hints.

The extent of a Pleaſure-Ground may be

various, according to that of the eſtate or premiſes, and of the quality and fortune, &c. of the owner; ſo may be from even a quarter or half an acre, to thirty or forty or more.

The ground ſhould previouſly be fenced, which may be occaſionally a wall, paling, or hedge, or ſome of each ſort, as may be convenient, and in ſome parts a foſſe or ha-ha, where neceſſary to extend the proſpect, either at the termination of a lawn, walk, or avenue; obſerving, the cloſe fences ſhould generally be concealed within ſide, particularly the wall and paling fences, by a range of cloſe plantation, unleſs where the wall may be wanted for the culture of wall-fruit. But ſometimes when a Pleaſure-ground adjoins to a fine park, paddock, or any agreeable proſpect, the boundary fence on that ſide is often either a low hedge, or a ha ha; but many preſer the latter, eſpecially at the termination of any ſpacious open, both to extend the proſpect more effectually, and give the garden an air of greater extent than it really has, at a diſtance, the ha-ha being ſunk, nothing like a fence appears, ſo that the adjacent park, fields, &c. appear to be connected with the garden. See WALLS, HEDGES, FOSSE, &c.

But with reſpect to the arrangement of the ſeveral diviſions, the following general ſketches are on a ſuppoſition of a conſiderable tract of ground; and if the plat of ground is ſmall, a greater ſimplicity of deſign muſt be obſerved in proportion.

Firſt, a noble open lawn of graſs ground, is extended on one of the principal fronts of the manſion or main houſe, directed either towards the open fields, park, or adjacent country, or towards the garden, if the ſituation requires it; or may be extended a little more or leſs each way, according as the ſituation and extent of ground may admit, or require; but, if poſſible, always conſiderably the moſt extenſive on the principal front; and ſhould be conſiderably wider than the houſe, if poſſible, and twice as long as broad at leaſt; or if the ſcope of ground admits it, may even be extended in length, as far as the extreme boundary of the garden: or carried over ha-ha's, to the adjacent park or paſture-grounds, &c. widening gradually in irregular windings, from the houſe outward; having each ſide bounded by various plantations of trees, ſhrubs, and flowers; in groves, clumps, thickets, and other elegant compartments, exhibited in a variety of rural forms, by various irregular, concave, and convex curves, and projections, to break all appearance of too ſtiff uniformity; introducing alſo between the plantations at intervals, breaks, or opens, of graſs-ground, communicating with the lawn and internal diviſions, in ſome places widely ſpread, in others more contracted; leaving alſo tracts for ſerpentine gravel-walks, winding under the ſhade of the plantations, ſo conducted as to command views of the lawn, and the interior diviſions occaſionally; obſerving, the homeward part of the plantation ſhould be inclined a little toward each wing of the houſe that company may ſooner arrive in the walks of the ſhrubbery; wilderneſs and groves, under the ſhade and ſhelter of the trees; but the outward extenſion on each boundary ſhould widen gradually towards the extreme termination, to give an air of grandeur, and admit of a full proſpect from and to the manſion. Each boundary being planted with a choice variety of ornamental trees and ſhrubs, deciduous, and ever-greens, arranged principally in ſeparate clumps, and other compartments, alternately, ſome conſiſting wholly of lofty trees, arranged ſometimes in regular groves, and ſome in groups or clumps, irregularly; other compartments being entirely of the ſhrub kind; and others conſiſting of trees, ſhrubs, and herbaceous perennials together: in all of which, arranging the taller growth backward, and the lower forward, according to their gradation of height; embelliſhing the fronts with the more curious low flowering ſhrubs and ever-greens, interſperſed with various herbaceous flowering perennials, all open to the lawn; and the termination of the lawn at the fartheſt extremity, if extended conſiderable outward to ſome agreeable proſpect, is generally continued open the whole width, by ſinking a ha-ha at the limits of the garden, to unite the view with the adjacent paſtures, plantations, and the open country, as well as admit of a grand view to and from the manſion. See LAWN.

But ſometimes the termination of the lawn, in default of proſpect beyond the limits of the garden, or that it is neceſſary to conceal the garden from the view of perſons without, is by a plantation of ſtately trees, in conſiderable concave, and convex ſweeps. Or ſmall lawns that extend immediately towards the garden, may be terminated by elegant ſhrubbery clumps, continued to the interior diviſion. However, for conſiderable lawns,

lawns, extended outward to the utmoſt verge of the garden, that admit of any tolerable proſpect of the adjacent fields, &c. a foſſe or ha-ha termination, is the moſt eligible, in order to continue the proſpect. See FOSSE and LAWN.

From the boundary plantation of the lawn, is continued the internal works, in a great variety of rural diviſions, in ſpacious walks and open ſpaces, bounded by ſhrubbery clumps, wilderneſs plantations, groves, thickets, &c. all in various elegant, irregular, compartments, as before mentioned, to exhibit a grand rural imitation, diverſified in a variety of forms.

In the general arrangement, the great art is to vary the proſpect of the different diviſions, ſo as they may variouſly preſent an air of novelty, and ſource of convenience and entertainment.

Around towards the outer boundary fence, is generally arranged a plantation of trees, and ſhrubs, in various irregular windings and projections next the garden, and broad enough to admit of a ſerpentine gravel-walk, winding through it all round the garden, under cover of the trees and ſhrubs, for private and ſhady walking: varying the plantation in different degrees of thicket and openings occaſionally, with here and there breaks and openings, for proſpect from the walks to the different parts of the garden and open country; and with circular or concave graſs ſpaces, bordering the walk at intervals for diverſity, and as places for ſeats, &c. under ſhade of the plantation.

In the more interior parts are exhibited magnificent walks, avenues, and graſs openings, ſome nearly ſtraight, others more or leſs winding, arranging in different directions; and having each ſide embelliſhed with plantations, in ſhrubbery clumps, groves of trees, wilderneſs plantations, thickets, and flower compartments, diſtributed in various arrangments and diſtances, admitting intervals of graſs ground ſurrounding and communicating with the various plantation diviſions, in ſome places of conſiderable extent, in others more or leſs contracted, according to the diſtance and arrangement of the ſeveral clumps and other compartments of plantation, which ſhould be exhibited in a variety of windings, openings, and cloſings, from one degree of light and ſhade to another; introducing alſo grand openings, at intervals, between the principal diſtricts of plantation, for views or proſpect, &c. and from the main walks and openings, have other ſmaller walks branching off at due diſtances, in a winding direction, to places of ſhade and retirement, amidſt the plantation, and for communication from one diviſion to another; exhibiting alſo opens of different figures and dimenſions, ſurrounded by clumps of trees and ſhrubs, ſerving ſome for receſſes, and places of ſhade, aforeſaid, others for garden edifices, as temples, grottos, rural ſeats, ſtatues, &c. and ſometimes for pieces of water; and if water from ſome upper ſpring or head, can be led in a winding courſe, through the lower parts in gentle meanders, it will have a charming effect; Other internal diviſions appear with an air of grandeur and magnificence, by exhibiting a ſpacious opening of graſs ground, bounded by the nobleſt trees and ſhrubs, in various elegant clumps, groves, groupes, and ſtraight ranges; and the opening terminated by ſome fine open proſpect, noble pieces of water or an ornamental building; and with gravel-walks, winding through the boundary plantations. Another part ſhall appear more gay and ſprightly, diſplaying an elegant flower-ground, deſigned ſomewhat in the parterre way, in various beds, borders, and other compartments, furniſhed with the moſt curious flowers; and the boundary decorated with an arrangement of various clumps, of the moſt beautiful flowering ſhrubs, and lively ever-greens, each clump alſo bordered with a variety of the herbaceous flowery tribe.

Another diviſion ſometimes preſents a wilderneſs, in irregular partitions of plantation, having many intervening ſerpentine walks, both private and open, bending in various directions, by many winding mazes or labyrinths, into openings formed in different parts amidſt the plantation, and to a grand one in the center of all; the boundary plantations of this diviſion being generally in cloſe aſſemblage, with tracts of ſerpentine walks between, leading in private meanders towards the interior parts; breaking out ſometimes into other walks that are open and ſpacious, both of graſs and gravel occaſionally, conducted alſo in ſerpentine turns, to cauſe the greater variety, having each ſide bordered with plantations of trees and ſhrubs, the talleſt behind, the lower growth in front; and from theſe grand walks, others more narrow and cloſe, branch off at intervals, in various windings, in ſome places being

ing closely bordered with tall trees, to effect a gloominess and perfect shade; the different walks leading now and then into circular openings of grass in different parts, each being surrounded with plantations as aforesaid; making also the principal walks terminate in a grand opening in the centre of the wilderness, in which may be some ornamental edifice, or fine piece of water, &c. furnishing all the plantation compartments, with a good variety of trees and shrubs; the deciduous and ever-green kinds principally in separate clumps, or quarters, interspersed with various wood flowers promiscuously, placing the more curious kinds of shrubs and flowers towards the fronts next the walks and openings, conspicuous to view. See WILDERNESS.

Straight ranges of the most stately trees, are sometimes arranged on grass ground in different parts, in contrast with irregular plantations; and produce a most agreeable effect, which though prohibited in many modern designs, always exhibit an air of grandeur; being arranged sometimes in single rows, others double, or two ranges at certain distances, forming a grand walk or avenue; in other parts, several ranges together in the manner of groves: all of which being arranged on grass ground occasionally in different situation, will have a grand and solemn appearance. See AVENUE and GROVES.

Sometimes an outward division discovers a close plantation of trees, like a thicket of woodland, arranged in irregular assemblage, mostly close and gloomy, resembling the internal arrangement of a wood; sometimes exhibiting sudden transitions of light and shade, by openings and closings, having serpentine walks winding through every part, and sometimes leading to openings in the midst of the plantation. Others breaking out suddenly from the thicket into open prospects of the other divisions; having all the walks bordered with flowering shrubs, hardy climbers, and various wood flowers that prosper under shade, and many common hardy shrubs, and herbaceous plants scattered promiscuously among the trees, to form more or less thicket, and cause diversity in the manner of a natural wood.

In other parts are sometimes discovered eminences, or rising grounds, as an high terrace, mount, steep, declivity, or other elevated situation, having the sides covered with grass and compartments of plantation; and walks leading under the shade of trees by easy ascents, to the top, where is presented an extensive prospect of the adjacent fields, cottages, hamlets, and country around, as well as afford a fresh and cooling air in summer.

Regular compartments and figures, in various forms, are also sometimes introduced in some extensive grounds, for variety, in contrast with the irregular works, and still to preserve some appearance of the remains of ancient gardening; such as straight walks, verged with borders of flowers, &c. regular parterres, in flower borders; square spaces, circles, and octagons, &c. inclosed with clipped hedges: hedge-work, formed into various architectural devices; detached yews, and other ever-greens, formed into pyramids and other regular figures; regular grass slopes, formed on the side of some declivity or rising ground. Bosquets of trees, surrounded with low ever-green hedges; straight avenues of trees in ranges, regular terraces, &c. a little of each being judiciously disposed in different situations, may prove an agreeable variety, by diversifying the scene, in contrast with the rural work aforesaid.

Sometimes a bleak declivity, or some rough hollow ground or vale, is made to exhibit a wild or uncultivated scene, by arranging some scattered clumps of trees, in the most irregular assemblage; the intervals or spaces between being rough grass ground, and here and there tufts of shrubby bushes, with sometimes a gentle rill of water, winding along the bottom of the declivity, or twisting its course through the vale.

Towards the lower parts of the garden, pieces of water are always exhibited where possible, in the most conspicuous points of view contiguous to the termination of the main lawn, or other spacious open, representing sometimes a bason, lake, &c. and sometimes a natural river, winding its course through different divisions, and its termination concealed by a curious turn, making it appear to lose itself in the adjacent plantations. See WATER.

With respect to the walks, these may be both of gravel, sand, and grass, but principally gravel for common walking; and grass for occasional walking in the heat of summer, which in dry hot weather may be more agreeable than the hard gravel-walks: therefore some of each sort is proper both for convenience and variety.

Gravel-

Gravel-walks, however, ſhould lead all round the garden and into the principal internal diviſions, ſo as to have dry and firm walking at all times of the year; when the graſs is too damp, as in winter and all wet weather.

Theſe gravel-walks ſhould be of proportional width, in different parts, according to the extent of the garden.

As to the diſtribution of gravel walks:—firſt a magnificent one, from fifteen to twenty or thirty feet wide, ſhould range immediately cloſe and parallel with the front of the houſe, and be conducted directly acroſs the lawn into the neareſt ſhrubbery and general plantation; where each ſide being verged with ſpaces of graſs ground, and ſhrubbery clumps, &c. from this main gravel-walk, other ſmaller ones, from five to ten or twelve feet wide, ſhould branch off at proper intervals, directed in the ſerpentine way; ſome leading through the outer boundary plantation, as already hinted; others into the central diviſions; and others carried along the boundary plantation of the main lawn; all of which walks being conducted through and between the different principal plantation, is highly requiſite, both for the convenience of ſhade, and retirement occaſionally, as well as to enjoy the variety of the different ſorts of trees, ſhrubs, and flowers, variouſly preſenting themſelves at different turnings: for the walks having various irregular twiſtings and windings, diſcovering only a moderate length at once, every turning produces new varieties; and ſhould likewiſe be ſo contrived, as at proper intervals to diſcover openings for proſpect into different principal diviſions of the garden; having in ſome places the plantation of trees, ſhrubs, and flowers, bordering cloſe upon the walks; in other parts, have on one ſide of the walks conſiderable graſs ſpaces, running into the adjacent plantation, in one or more concave curves, to form the greater diverſity.

And in ſome places the windings of the walks ſhould be gradual and moderate; in others exhibit ſudden turns, and grand ſweeps, each turning exhibiting ſometimes a magnificent projection in the plantation, others ſome ſpacious opening, bordered with curious plants; other parts a cloſe thicket, which ſometimes may ſeem to terminate the walk, when by a ſudden turn it breaks out all at once into ſome grand open diviſion, ſpacious open walk, an avenue, or elegant piece of water, open grove, &c. And in other parts a walk ſometimes ſuddenly divides into two or three diviſions, leading different ways, in bold ſweeps, each ſeparation being formed by a projecting clump of ſhrubbery work, or group of trees, &c. and each diviſion of the walk is conducted by curious ſerpentine turns, as ſoon to be concealed from the other; by the intervening plantation compartments.

All theſe gravel-walks ſhould be laid with the beſt gravel, ſix or eight inches deep at leaſt; but if more the better. See GRAVEL and GRAVEL-WALKS.

Graſs-walks may be conſidered as all the open graſs ſpaces, whether formed in the manner of walks, or as breaks or diviſions between the various plantations, all of which ſerving both for communication to different parts, and to render the ground more rurally ornamental, and for occaſional walking in dry weather in ſummer; but ſome tracts of conſiderable width and length, formed into graſs-walks, leading to different diviſions, having each ſide bounded with clumps of trees, ſhrubs, and flowers, gives an air of grandeur to the garden, allotting ſmaller breaks, or open of graſs, branching off between, the plantation compartments, as formerly mentioned.

The graſs ground of this garden may be formed, either by ſowing graſs-ſeed, or by laying it with turf, cut from ſome common or downs; but in very extenſive works turfing the whole would be a great expence; therefore ſeed is the moſt eligible for the principal ſpaces in very large gardens. For the method however of forming graſs-ground, both by ſeed and turfing, and for keeping the graſs in order, ſee GRASS.

Water being ſo ornamental in all garden deſigns, no pains ſhould be ſpared to introduce it where poſſible; but where it admits of a conſtant running ſtream, from ſome adjacent upper ſpring, its beauties may be rendered admirably fine, as it may be conducted in meanders through the garden; ſo as to effect a beautiful aſſemblage of verdure and water together; and if it ſhould be continued to any conſiderable length, one or more ornamental Chineſe bridges may be carried over at convenient places, which will have a beautiful effect, and ſerve for communication with the oppoſite diviſions, on each ſide of the rivulet.

Caſcades, and other water-falls, have alſo a fine effect, where there are a conſtant plentiful ſtream, and the ſituation proper to give

the water a due fall, from a high to a lower part, upon a parcel of rugged ſtones, to encreaſe the noiſe, and break and diſperſe the water.

In ſome grounds, by their natural ſituation, water may be obtained at a moderate expence; as ſometimes a contiguous vale, or meadow, bounded by riſing ground, and with a brook or rivulet conſtantly running through it, may be eaſily thrown into the moſt agreeable form: and ſometimes large ſprings iſſuing from an upper ground, and running down a moderate deſcent between two riſing grounds, to ſome vale below; it may be contrived, by making proper heads at diſtances, to form ſeveral lakes ſtrung together, as it were, one above another, up to the beginning of the ſpring; each head may form a beautiful water-fall, or caſcade; having the riſing grounds on each ſide embelliſhed with clumps of plantation.

Lakes and artificial rivers may alſo be contrived in a flat or level ground, where there are any contiguous brooks that can be conducted to ſupply them with water.

All pieces of water ſhould generally be contrived in a natural imitation, as much as the ſituation will admit; and its boundary on all ſides ſhould be graſs ground to ſome conſiderable width, ſloped off as eaſy as poſſible, correſponding with the other adjacent graſs ground, to admit of a proſpect of the water at ſome diſtance. See WATER.

The various compartments of ground intended for the different plantations, ſhould be digged or trenched for the reception of the plants; particularly for all plantations of ſhrubbery, wilderneſs quarters, flower compartments, &c. and the ground ſhould be raiſed ſomewhat above the common level, in a gentle ſwell; eſpecially all detached compartments; ſuch as ſhrubbery clumps, and flower partitions, and moſt other detached compartments of ground for any kind of ornamental plantation in gardens, ſhould generally be raiſed in a moderate rounding ſwell, gradually from each ſide to the middle; or for any continued ſide plantation it may be raiſed in a gentle ſlope: for the ſwelling and ſloping figure always ſtrikes the eye the moſt agreeably, as well as ſhew the plants to the beſt advantage.

But where intended to have groves of ſtately trees, or any ſtraight ranges of trees, either ſingly, or double lines, forming a walk or avenue; it is moſt in character to diſpoſe them all on graſs ground; in which they will appear the moſt rural and beautiful.

Likewiſe elegant ornamental trees, both as ſingle ſtandards, and in detached groups, or clumps, appear the moſt beautiful when diſpoſed on openings of graſs ground.

However, for all kinds of ſhrubbery and wilderneſs plantations, &c. the compartments ſhould generally be dug ground, as before obſerved.

All the plantation compartments of ſhrubbery, wilderneſs, &c. ſhould be planted with ſome conſiderable variety of different ſorts of trees, ſhrubs, and flowers, artfully diſpoſed in irregular arrangement; the taller behind, the loweſt forward, and the different ſorts ſo intermixed, as to diſplay a beautiful diverſity of foliage and flowers, diſpoſing the more curious kinds contiguous to the principal walks and lawns.

For a liſt of the different ſorts of trees, ſhrubs, &c. proper for embelliſhing the ſeveral diviſions, See DECIDUOUS TREES, and EVERGREENS.

Obſerving, that as the trees and ſhrubs are of two different tribes, deciduous, and evergreen kinds; thoſe of each tribe ſhould be moſtly planted in ſeparate clumps, in which they will effect the moſt agreeable variety; and in ſome places may exhibit clumps compoſed of both ſorts, to cauſe the greater diverſity; and many of the moſt conſpicuous deciduous compartments may be embelliſhed towards the fronts, with ſome ſhowy evergreens thinly diſperſed; which will appear ornamental and lively in winter, when the deciduous plants are deſtitute of leaves. In planting the ſeveral ſhrubbery clumps, &c. ſome may be entirely of trees; but the greater part an aſſemblage of trees and ſhrubs together; ſome entirely of the low ſhrub kind, in different ſituations, between the clumps, of larger growth; likewiſe ſhould interſperſe moſt of the ſhrubbery and wilderneſs compartments with a variety of hardy herbaceous flowery plants, of different growths; having alſo here and there clumps entirely of herbaceous perennials: the diſtribution or arrangement of the clumps, and other diviſions of the different kinds, both trees, ſhrubs, and flowers, ſhould be ſo diverſly, as to exhibit a proper contraſt, and a curious variation of the general ſcene.

And in the diſpoſing the various trees, ſhrubs, and other plants in their reſpective compartments, obſerve, ſomewhat in the quincunx way, not exactly ſo, nor in regular ranges; and for the moſt part, place the talleſt

talleſt towards the middle or back part, and the lower forward towards the front, according to their natural ſtature of growth; obſerving alſo to intermix the different ſorts in each clump, &c. in ſuch order, as to diſplay a diverſity of different foliage and flowers, as aforeſaid, as well as exhibit a conſpicuous variety. Likewiſe placing the various ſorts at ſuch proportionable diſtances and diſpoſitions, according to their various growths as each may have full ſcope to ſpread its head; and ſo as the proſpect of one may be no interruption or impediment to the growth and appearance of another, but all ſo judiciouſly arranged as to ſet off each other and appear to proper advantage from the contiguous lawns, walks, and other diviſions. See PLANTATION.

Obſerve, in planting any continued or running plantation where ſhady walks are deſigned, that particular care is requiſite in arranging a due ſhare of the taller trees and ſhrubs nearer the walks and in ſuch order as to produce the deſired effect, particularly in the continued plantation of ſhrubbery work around the outward boundary, and on the boundary of the lawn and other running plantations, through which ſerpentine walks are carried: planting many tall-growing trees and ſhrubs more or leſs towards the walk in ſuch arrangement as to produce proper ſhade, ſhelter, and private walking, with occaſional openings and cloſings at intervals, as hath been already obſerved; interſperſing alſo many ſmaller ſhrubs and hardy herbaceous plants between the larger growths; diſpoſing the whole ſo judiciouſly as to afford alſo a ſource of variety in the excurſion of the walks.

Theſe plantations for ſhady walks are highly neceſſary to retire to occaſionally, for ſhelter from the injuries of the weather: they afford ſhade from the ſcorching rays of the ſummer's ſun, ſhelter from tempeſtuous winds and cold blaſts, and for private walking when required. But where very cloſe and gloomy ſhade is required in any particular parts for diverſity, ſome tall trees ſhould be arranged cloſe along the verge of the walks backed with others, and a variety of hardy ſhrubs, in ſuch order as to produce the proper effect.

In planting groves and avenues, they ſhould be compoſed principally of the tree kind, and ſuch as are of ſtraight and handſome growth, with the moſt branchy, full, regular heads, and may be both of the deciduous and ever-green tribe; but generally arranged ſeparately; which, for groves and avenues, ſhould always be in ſome conſiderable open ſpace, formed into graſs ground, either before or after planting the trees; and in planting the groves, it is moſt eligible to arrange the trees in lines, in ſome places ſtraight rows, others in gentle bendings, or eaſy ſweeps, having the rows at ſome conſiderable diſtance that the trees may have full ſcope to diſplay their branchy heads regularly around; and in ſome places may have cloſe groves to form a more perfect ſhade. And as to avenues and walks of trees; they may be formed either entirely of deciduous trees, or of ever-greens; but the deciduous kinds are in moſt eſtimation for forming fine avenues: however, avenues and grand graſs-walks, planted with beautiful ever-green trees, make a fine appearance. In both ſorts, the trees are moſt commonly diſpoſed in ſtraight rows, one on each ſide of the avenue, though ſometimes grand walks of trees may be both in ſtraight lines and in windings, to exhibit the greater variety, planting the trees generally, both in the avenues and walks, at proper diſtances to have full ſcope to branch out regularly around and diſplay their beautiful heads. See AVENUES, GROVES, &c.

But thickets may be compoſed of all ſorts of hardy deciduous trees, planted cloſe and promiſcuouſly, and with various common ſhrubs diſperſed between the trees, as underwoods, to exhibit a more or leſs thicket occaſionally in different parts. See THICKET.

Thickets may alſo be of ever-green trees, particularly of the pine and fir kinds.

Straight rows of beautiful ever-greens, as pines, firs, cypreſs, cedars, &c. forming magnificent walks, are very ornamental.

In ſome open ſpaces of graſs-ground, ſuch as ſpacious open lawns, or other conſiderable opens in parks, &c. ſhould diſpoſe ſome of the moſt beautiful trees and elegant ſhrubs detached, both ſeparately as ſtandards or ſingle objects; and in groups or aſſemblages, from two or three to five or ten or more in different groups or clumps; ſome irregularly, others in curves, ſtraight lines, &c. for variety, arranging both ſingle ſtandards, and groups a conſiderable way aſunder not to obſtruct the proſpect, and at ſuch irregular diſtances as if they had grown there by chance.

It ſometimes happens that on the ſpot or tract of ground which is deſigned for a Plea-

ſure-ground are found large old trees of conſiderable ſtanding, properly ſituated to be introduced into the deſign, ſometimes in proper aſſemblage for conſtituting a grove or a thicket, and ſome as ſingle ſtandards, groupes, or clumps, &c. which will prove a conſiderable advantage; and ſhould be preſerved with the utmoſt care, as it would probably require an age or two to form the like with young plantations; and although the trees ſhould ſtand ever ſo cloſe, or irregular and ſtraggling, they, with proper addreſs of thinning or regulating where neceſſary, may be introduced for purpoſes as above ſo as to have a fine effect. See GROVES, &c.

A commodious ſpace for a flower-ground diſtinct from the other diviſions as formerly hinted, is moſt neceſſary for the culture of the more curious and valuable kinds of flowers.

This principal flower-ground forming a diſtinct diviſion, excluſive of the other flower compartments diſtributed in different parts in contraſt with the ſhrubbery clumps, &c. ſhould be allotted for a choice collection of the fineſt kinds of both bulbous and fibrous rooted flowers. The form of this ground may be either ſquare, oblong, or ſomewhat circular; having the boundary of the diviſion formed by an arrangement of a curious ſhrubbery embelliſhed with a collection of the moſt beautiful flowering ſhrubs; and the interior part ſhould be divided into many narrow compartments, either in the manner of a parterre, formed into ſtraight borders, beds, &c. edged with box, ſee PARTERRE; or divided into plain four-feet-wide beds arranging parallel, having two-feet-wide alleys between bed and bed: in either method having a walk carried all round next the outer boundary, then a border ſurrounding the whole diviſion, and within this have the various diviſion of beds, &c. as above, raiſing them all in a rounding manner, higheſt in the middle, and edge the compartments principally with dwarf-box, and ſome with thriſt and pinks by way of variety, laying the walks and alleys with the fineſt gravel.

In this diviſion you ſhould depoſite all your fineſt hyacinths, tulips, narciſſus, polyanthos-narciſſus, jonquils, ranunculus, anemonies, and all the other more curious bulbous and tuberous rooted flowers; each ſort principally in ſeparate compartments, eſpecially of the choicer kinds; which being neceſſary both for diſtinctions ſake and for the convenience of giving them occaſional protection from inclement weather: but for particulars, in reſpect to the ſorts, method of planting, and general culture, ſee the reſpective articles under the proper *genera*.

Likewiſe in this diviſion ſhould be planted a curious collection of the fineſt fibrous-rooted flowery plants, as carnations, polyanthuſes, auriculas, and many other curious ſorts, arranging ſome of the moſt valuable in beds ſeparately: others may be diſperſed in different compartments forming an aſſemblage of various ſorts.

In other compartments may exhibit a variety of all ſorts, both bulbous and fibrous-rooted kinds.

In ſpacious Pleaſure-grounds, various buildings and erections are introduced as ornaments to particular departments. For inſtance, light ornamental buildings, as temples, a banquetting-houſe, bowers, alcoves, grottos, rural ſeats, cottages, fountains, obeliſks, ſtatues, and other edifices and devices, are often introduced in different parts in openings between and contiguous to the diviſions of plantation and termination of grand walks, &c. Some of theſe kinds of ornaments however being expenſive, are rather ſparingly introduced; ſometimes a temple is preſented at the termination of a grand walk or opening, or ſometimes a temple, banquetting-houſe, or bower is ſtationed in the centre of ſome ſpacious opening of graſs ground in the internal diviſions; other parts preſent alcoves, bowers, grottos, rural ſeats, &c. at the termination of different walks or openings and with rural ſeats placed in different opens or breaks by the ſides of long walks, under ſhade of trees, for places of reſt, &c. [Fountains and ſtatues are generally introduced in the middle of ſpacious opens; ſtatues are alſo often ſtationed at the termination of particular walks; ſometimes in woods, thickets, and receſſes, upon mounts, terraces, and other ſtations, according to what they are to repreſent.

Sometimes alſo there are exhibited root-houſes, rock and ſhell-work, &c. repreſenting hermitages, caves, and the like; being generally ſtationed in ſome retired or private ſituation, and as theſe kind of buildings being arched or vaulted, they are commonly covered with a coat of earth and turfed with graſs, ſo as to appear like a ſort of mount, hillock, or knoll, and planted with ſome little

little clumps of ſhrubs, &c. having private walks leading to the entrance.

Likewiſe in ſome parts is exhibited artificial rock-work, ſometimes contiguous to ſome grotto, fountain, rural piece of water, &c. and planted with a variety of ſaxatile plants, or ſuch as grow naturally on rocks and mountains.

Ornamental bridges over artificial rivers, or any rural pieces of water in ſome magnificent opening, ſo as to admit of a proſpect thereof at ſome diſtance or from the habitation, have a fine effect.

*General Culture of the Ground.*

With reſpect to the general culture of this ground, neatneſs muſt be ever obſerved in every part; the walks, lawns, ſhrubbery, clumps, &c. and the ſeveral compartments of trees, ſhrubs, and flowers, kept duly furniſhed with a proper ſtock of the various plants.

The gravel-walks muſt always be kept free from weeds and all ſorts of litter, and ſhould be rolled twice or three times a week in ſummer, particularly the principal walks, but never leſs than once a week; previouſly trim the edges cloſe when neceſſary, eſpecially if verged with graſs-ground; pulling out all weeds, and lightly ſweeping off all looſe litter: and then roll them well with an iron or ſtone roller. The rolling in ſummer ſhould be occaſionally performed immediately after ſhowers of rain, particularly the firſt after any continuance of very dry weather, to ſettle all the looſe parts compact and ſmooth: in winter, the rolling ſhould alſo be occaſionally performed; obſerving, it is improper to break up the walks in that ſeaſon in rough ridges as often practiſed, to remain in that unſightly manner till ſpring, whereby the walks are rendered uſeleſs at a time when there is hardly any dry or ſound walking upon graſs or other parts, beſides their having a diſagreeable ſlovingly appearance; let the walks therefore remain undiſturbed, at leaſt till ſpring, when, if the ſurface is foul, or moſſy, they may be broken up, and turned the ſurface to the bottom, and the bottom to the top; directly tread, rake, and roll them ſmooth, proper for walking on. See GRAVEL WALKS.

All the principal graſs lawns and walks within the limits of the Pleaſure-garden ſhould alſo be kept perfectly neat by frequent mowing in ſummer, to keep the graſs ſhort, cloſe, and fine, like a fine paſture down or common; likewiſe poleing it frequently with a long pole to ſcatter the worm-caſts of earth which ſo greatly deface all graſs; and give alſo occaſional rolling both to clean up the ſcattered worm-caſts to make the ſurface clean, and to render it firm and ſmooth. The poleing and rolling ſhould generally be performed the day previous to mowing, whereby the mowing will be more eaſily, expeditiouſly, and effectually performed; obſerving the mowing will be neceſſary about once a week or fortnight, from March or April until September or October, chooſing always dewy mornings, or moiſt weather for this work, being careful to have each mowing performed with an even hand, not to ſcore or leave the mark of the ſcythe at each ſtroke, which has a moſt diſagreeable appearance; and directly after mowing ſweep up all the ſwarths of graſs as clean as poſſible into heaps and carry them away, See GRASS.

Where numerous wild daiſies deface the graſs in May or June as is ſometimes the caſe, even often in a day after mowing, they may headed down at a great rate with an old broad ſword fixed in the end of a long pole.

Likewiſe keep all graſs-ground clean from litter, ſuch as fallen leaves of trees, &c. which may be expeditiouſly effected by a light broom or beſom on a long handle. See BROOMS.

The edges of all principal graſs-walks and thoſe of graſs-ground, next gravel-walks in particular, ſhould always be kept cloſe and even; which once a year in ſpring, when the walks are to be turned and new laid, may be previouſly cut even ſlightly with an edging iron: after this, during the ſummer, they may be trimmed even occaſionally as the graſs grows, either with the points of the garden-ſhears, with a pair of ſheep-ſhears, or with the point of a knife; for if theſe edges are not kept cloſe and even they have a ſlovenly appearance.

The ſhrubbery and other plantations of trees and ſhrubs, ſhould generally all be ſuffered to take their own natural growth, and branch out into full heads, only juſt giving a little occaſional trimming to any very irregular growths, ſuch as retrenching or reducing any very luxuriant rude ſhoots, or conſiderable ramblers, running wildly from all the other branches and all dead wood; likewiſe, for the general part, keep all the ſhrubs from interfering or intangling with one another, by ſhortening occaſionally any

ſtraggling or rambling interfering branches, ſo as the head of each ſhrub may appear diſtinct, in which they will ſhew themſelves to proper advantage, and effect a more agreeable variety.

Obſerving, the beſt ſeaſon for performing thoſe occaſional regulations of pruning is, for the deciduous kinds, any time in winter or ſpring when deſtitute of leaves, eſpecially for any general trimming; but for the ever-green kinds, the moſt eligible ſeaſon to give any neceſſary pruning, is either autumn or in ſpring, about March or April, eſpecially when any conſiderable trimming may be occaſionally required, as if performed in winter or very ſharp weather, that by laying the more interior tender parts more immediately open to the cold, it often injures the leaves and young ſhoots; however, where only a little retrenching or ſhortening here and there a rambling ſhoot is neceſſary, it may be performed almoſt any time to any of the ſorts: but remarking both of the deciduous and ever-green kinds, that when any general trimming is occaſionally required throughout the different plantations, it is highly proper to perform it at the above-mentioned ſeaſons, previous to giving the annual digging to the ground between the ſhrubs, &c. as directed below.

When cloſe thickets however are intended, no regulation or thinning need be obſerved, but let the various ſorts run promiſcuouſly.

The ground of the ſhrubbery plantation and wilderneſs quarters ſhould generally be digged every year, in winter or ſpring; previouſly giving the ſhrubs any neceſſary trimming as above obſerved; then dig the ground between neatly, one ſpade deep, trimming off any rambling ſuckers or ſpawn from the roots, leaving the ſurface of the ground level and ſmooth: this operation gives health and vigour to the plants, kills weeds, and gives the place an air of culture, and a lively neat appearance.

After this general digging the clumps, &c. the ground muſt be kept clean from weeds all ſummer, by occaſional hoeing in dry weather, which with a Dutch ſcuffing-hoe, may be expeditiouſly performed. See HOE and HOEING.

Great care is requiſite to ſupport with ſticks all ſuch plants as require it, particularly all ſuch of the herbaceous tribe that are liable to be over-turned by the wind, weight of wet, &c. for there is great merit in preſerving all tall plants in an upright poſture.

Keep likewiſe all the flower compartments in neat order by an annual digging, in autumn, winter, or ſpring; hoeing in ſummer to deſtroy weeds; at each hoeing always rake the ſurface ſmooth, particularly the principal borders and other compartments: likewiſe according as the various plants grow up, let ſuch as need ſupport have ſticks placed to preſerve them upright; and as they have done flowering and their ſtalks decay, cut them down cloſe, clearing off alſo all decayed leaves, and other rubbiſh from time to time as they appear; taking up alſo the roots of curious bulbous flowers, as their leaves and ſtalks decay: and in autumn, about October or November, it is proper to give a general dreſſing by cutting down all remaining decayed ſtalks, and prepare to dig the ground: obſerving, if any manure is neceſſary, this is the time to apply it; ſo digging the ground neatly one ſpade deep, and then if any kinds of plants or roots are wanted, plant them now, and finiſh with a neat raking, that the whole may lie clean and decent during the winter; and in ſpring ſtir the ground a little with a hoe or rake, or ſuch as was not digged in autumn or winter, as above adviſed, muſt now be done; and finiſh putting in ſuch plants that were omitted in autumn; then rake the ground ſmooth that every part may aſſume a freſh chearful appearance in the ſpring and ſummer ſeaſons.

All kinds of hedge-work and trained figures of ever-greens, ſhould be ſhorn or clipped annually in ſummer with garden ſhears; but to keep them perfectly neat, twice every ſummer is neceſſary, the firſt in June, and the ſecond in Auguſt or September. See HEDGES.

Alſo all edgings of box, &c. to walks, borders, and beds, ſhould always be neatly clipped once or twice every year in ſummer; but to have them extremely neat, they ſhould be clipped twice in that ſeaſon, *i. e.* in May or early in June, and in Auguſt, chooſing principally moiſt weather, if poſſible, for if cut in very dry hot weather, the leaves change brown and unſightly: the ſame alſo happens if clipped in winter, or early in ſpring, while cold weather and froſty nights prevail, ſo ſhould cut theſe edgings principally in ſummer. See BUXUS, article *Dwarf-box for edgings.*

All

All other edgings of thrift, pinks, daiſies, London-pride, &c. ſhould alſo be kept cut in on each ſide, every ſummer after the flowers are paſt, to keep them neat, and within due bounds, performing it in moiſt weather, as obſerved of the box edgings; likewiſe edgings of underſhrubby aromatics muſt have the operation of clipping annually performed at ſides and top in ſummer: for all edgings ſhould be kept low, narrow, and regular, otherwiſe they will appear clumſey and unſightly. See EDGINGS.

For particulars relative to the general culture of the various ſhrubs and flowers, ſee their reſpective *genera*.

*Of ancient Deſigns.*

Deſigns in ancient gardening for a Pleaſure-ground conſulted uniformity in every part, exact levels, ſtraight lines, parallels, ſquares, angles, circles, geometrical figures, &c. all correſponding in the greateſt regularity, to effect an exact ſymmetry and proportion.

Straight walks were every where obſerved, and all arranged parallel, and croſſing one another in regular interſections; generally a grand one of gravel was extended in a ſtraight line immediately from the front of the main houſe, having each ſide verged either with a regular ſtraight border of earth, furniſhed with a variety of flowers, &c. and ſometimes having a verge of graſs three or four feet wide, then a border embelliſhed as above with various plants; this main walk being often interſected by others at regular diſtances, ſo as ſometimes to divide the ſpace immediately in the front of the houſe into four, ſix, or more equal ſquares, ſome of which were ſometimes formed into parterres, ſometimes only naked graſs-plats, or other uniform diviſions; and often the whole garden was thus divided by ſtraight, parallel, and interſecting walks into many regular ſquares and angles, without any variation.

Grand parterres were very commonly preſented immediately on the front of the main houſe, having a grand walk of graſs or gravel directly from the houſe through the middle, or dividing the parterre ground into two diviſions. See PARTERRE.

In the more interior parts, large tracts of ground were frequently divided by ſtraight graſs walks into many ſquare and angular diviſions of wilderneſs, each diviſion ſurrounded by tall regular hedges of various kinds of trees and ſhrubs, kept in uniform order by an annual ſheering or clipping; having the interior part of each quarter planted with trees and ſhrubs, which however were in a manner concealed by the hedges from perſons in the adjacent walks, ſo that hardly any thing but cloſe hedges, the ſame thing over again, appeared to view, on each ſide of the walks; and all the walks generally led into uniform openings of graſs, particularly to a grand circle or octagon in the centre.

Frequently there were partitions of regular hedge-work, particularly of ever-greens, ſurrounding large ſquares of graſs ground, deſigned as pieces of garden ornaments, being often formed into various uniform devices of rural architecture; ſuch as pilaſters, arcades or arches, porticoes, galleries, amphitheatres, pavilions, cabinets, bowers, pediments, niches, and cornices; likewiſe regular arbors, having the ſides formed into arcades, and ſometimes the top curiouſly vaulted; and with various other formal imitations, all performed in hedge-work, which were often ſo arranged and artfully trained, as to effect an air of grandeur and art, as well as afford an opportunity for the gardener to diſplay his ingenuity in ſuch kind of works. High hedges were alſo in great repute, as boundaries to grand walks and avenues, ſometimes carried up from fifteen or twenty, to thirty or forty feet high; ſometimes trained perfectly cloſe from the very bottom to top, others open below a conſiderable way, and curiouſly formed into regular arches, &c. all of which ſometimes appeared magnificent and ornamental, but were troubleſome and expenſive to keep in order, on account of their great height: however, all ſorts of hedge-work was generally eſteemed ſo ornamental in ancient gardening, that almoſt every diviſion was ſurrounded with regular hedges of one ſort or other, preſenting themſelves to view in every part, ſhutting out all other objects from ſight; but in modern deſigns hedges are rarely admitted; every compartment of plantation being left open to view from the walks and lawns, to have a full proſpect of the various trees, ſhrubs, and flowers, which conſequently are more beautiful than ranges of cloſe hedges: but for the ſake of variety, a little ornamental hedge-work might ſtill be introduced in ſome particular parts of the ground. See HEDGES, the article *Internal Hedges*.

Wilderneſſes were always deſigned with the greateſt uniformity, the ground being di-

vided

vided by walks into many ſquares and angles, all correſponding, and all the walks ſtraight, and the principal ones all leading to ſome common centre or opening, ſuch as a circle, octagon, &c. with all the quarters or diviſions commonly ſurrounded with cloſe hedges as before obſerved, both of the deciduous and ever-green kinds. See WILDERNESS.

Labyrinths of hedge-work, in the manner of a wilderneſs, alſo prevailed in many large gardens. See LABYRINTH.

Detached trained figures of ever-greens, as yew, cypreſs, juniper, holly, box, and various other cloſe-growing ever-green plants, but principally yew, were alſo very predominant in ancient deſigns, and generally diſpoſed in regular ranges along the borders and other verges of grand walks; being trained by clipping into various formal ſhapes, as pyramids, obeliſks, columns, &c. in a variety of forms, with a multitude of other formal figures, all placed in the moſt exact arrangement. Some alſo were often placed ſingly in the midſt of ſome circle, octagon, or other open ſpace, and were all kept in order by clipping once or twice every ſummer, and were conſidered as great ornaments.

Straight rows of the moſt beautiful trees forming long avenues and grand walks were in great eſtimation, which, though not often admitted in modern deſigns, were formerly conſidered as great ornaments, and no conſiderable eſtate and eminent Pleaſure-ground was without ſeveral of them; but modern planners rarely introduce ſtraight ranges of trees for avenues or walks, but even often demoliſh old ones of a century or two ſtanding, as being thought too formal; however, ranges of trees, forming ſpacious avenues, &c. about extenſive grounds, always give an air of grandeur and dignity to the premiſes.

Regular graſs ſlopes alſo greatly prevailed in moſt old gardens, as ornaments to particular diviſions; ſometimes was formed at the beginning of ſome riſing ground, alſo ſometimes at the termination, and frequently ſome low ground, canals, and other formal pieces of water, were bounded by a range of regular graſs ſlopes; likewiſe regular graſs ſlopes formed the ſides of terraces and other riſing grounds. Moderate graſs ſlopes alſo often formed a boundary to ſome open ſpaces, as a bowling-green, flower-garden, &c. forming a ſort of terrace all round, having ſometimes a gravel-walk at top; theſe ſlopes were always formed with the greateſt regularity and exactneſs, which in ſome ſituations were very ornamental. They were of various dimenſions in reſpect to height, from one foot to ten or twenty high, according to the nature of the ſituation and purpoſe they were deſigned for, in different parts; and ſome being ranged ſingly, others double, treble, or ſeveral one above another on the ſide of ſome conſiderable riſing ground, in a theatrical arrangement.

Regular terraces, either on a natural eminence or of forced ground, were alſo introduced for ornament, and for the ſake of proſpect, and of enjoying the freſh air in ſummer.

But as the above taſte in the ancient ſtyle of deſigning gardens, being generally crowded every where with exact uniform diviſions and formal figures, ſome of which being often trifling, and the ſame thing often prevailing in almoſt every part, that even gardens of very conſiderable extent afforded very little variety; and the perpetual ſhew of ſtiff formality of the ſame thing over again, together with the numerous ſurrounding hedges in every diviſion, obtruding conſtantly upon the ſight, obſtructing all other objects, that at laſt they became ſo diſagreeable to perſons of taſte, they aboliſhed almoſt all formal works from their gardens, ſuffering hardly any regular appearance, ſubſtituting rural works, in imitation of nature, as already deſcribed.

However, for the ſake of diverſity, ſome of the more elegant regular works might ſtill be admitted ſparingly, in particular diviſions, in contraſt with the general rural performances, ſo as in ſome places to exhibit a grand ſtraight gravel or graſs-walk, in others a parterre, and in ſome places ſtraight rows of the moſt beautiful trees, forming walks and avenues, and ſometimes a range of hedge-work, and here and there a pyramid of yew or other proper ever-greens; and ſometimes a regular graſs ſlope, formal terrace, &c. all of which, if judiciouſly diſpoſed, might aſſiſt in diverſifying the general ſcene.

PLENUS *Flos*, a full or moſt double flower; a flower having the greateſt plenitude or multiplicity of petals, often to the diminution or entire excluſion of the parts of fructification.

Perfectly Full Flowers, whoſe multiplicity of petals obliterate the generative organs, conſequently prove barren, *i. e.* rarely ever producing ſeed; but moſtly all Full Flowers are varieties of ſingles, which are always the original ſpecies; ſo that the ſingles and half-doubles only

only produce the ſeed, and from which both double and ſingle flowers are obtained; however, the full double flowers are eſteemed the moſt beautiful, and are often the floriſts pride.

But all flowers of the above luxuriant nature are commonly called double flowers; obſerve, however, a Full Flower is to be conſidered as the higheſt degree of luxuriance or plenitude, as the petals are generally multiplied in many ſeries to the very centre, ſo as frequently to choak up all the male and female organs, as ſometimes happens in carnations, ranunculus, anemonies, &c. a double flower, properly ſo called, may be ſaid to have its ſeries of petals only twice repeated; however, among gardeners and floriſts all multiplied flowers, whether their petals are repeated but twice, thrice, or many times, are commonly all denominated double flowers, and are generally in the greateſt eſtimation, as being the moſt delightful to the eye, in the opinion of floriſts.

But although full and double flowers are often the moſt beautiful to the eye, as juſt obſerved, yet they are to be conſidered as an unnatural increaſe and monſtrous production; by Linnæus called vegetable monſters, becauſe double flowers are only varieties of ſingles, varying by culture from their natural ſingle or *characteriſtic* ſtate; for the *characters* of the genera are always drawn from ſingle flowers, never from full or double ones, whoſe number of petals often vary more or leſs by culture, and are never to be depended on to eſtabliſh the *characters*.

Full or double flowers therefore are varieties both of monopetalous and polypetalous flowers; for example, the hyacinth, tuberoſe, primroſe, &c. being all monopetalous or of one petal only in their natural or *characteriſtic* ſtate, yet the increaſe or repetition of the petals one within another is often continued to the very centre, choaking up the organs of fructification; aforeſaid, though perfect fullneſs is leſs frequent in flowers with one petal than in thoſe with ſeveral. Polypetalous flowers therefore, ſuch as carnation, anemone, ranunculus, marſh-marigold, columbine, poppy, pœony, tulip, crown-imperial, &c. all having ſeveral petals, are liable to all degrees of luxuriance, from the loweſt to the greateſt fullneſs.

The mode of luxuriance is effected either by a multiplication of the diviſion of the limb or upper part of the petal, or of the petals entirely; and in flowers having nectariums, the impletion is often formed by a multiplication of the nectarium, as frequently occurs in columbine, narciſſus, larkſpur, &c.

Compound flowers are alſo liable to various degrees of luxuriance; as in African marigold, ſun-flower, garden-daiſy, feverfew, &c. for an account of the mode of impletion, ſee COMPOSITOS *flos*.

PLUMBAGO, Lead Wort.

This genus conſiſts of ſome flowery perennials, of which, one is herbaceous, for the open borders, and the others are ligneous, or underſhrubby plants, for the ſtove; have fibrous roots, ſending up ſlender ſtalks, three or four feet high, adorned with oval ſpear-ſhaped leaves, and terminated by cluſters and ſpikes of ſmall monopetalous flowers.

Claſs and order, *Pentandria Monogynia*.

*Characters.*] CALIX, is monophyllous, tubular, pentagonal, quinquedented, and permanent. COROLLA is monopetalous, funnel-ſhaped, divided above into five oval-ſpreading ſegments; and a nectarium of five very ſmall valves, including the germen. STAMINA, five ſubulated filaments ſitting on the nectarium, and ſmall verſatile antheræ. PISTILLUM, a very ſmall oval germen, ſimple ſtyle, having a ſlender five-pointed ſtigma. PERICARPIUM, none, a ſingle oval ſeed lodged in the permanent calix.

There are about four ſpecies, the principal of which are the three following.

*Hardy Herbaceous Kind.*

[1]PLUMBAGO *Europæa*.

*European Plumbago.*] Hath thick, fibrey, deſcending roots, ſending up many ſlender, channelled ſtems, branching a yard high; ſpear-ſhaped, rough, amplexicaule leaves, and all the ſtalks and branches terminated by bunches of blue flowers, in October.

*Varieties.*] With purple flowers — with white flowers.

They are all perennial in root, and annual in ſtalk; natives of Italy, &c. but ſucceed in the open ground.

*Ligneous Stove Kinds.*

Theſe are ſomewhat underſhrubby, and natives of India.

[2]PLUMBAGO *Zelanica*.

*Ceylon Plumbago.*] Hath a thick juicy, acrid root, ligneous, very ſlender, branchy ſtalks, riſing three or four feet high; oval, ſmooth, leaves, having ſhort foot-ſtalks; and the branches

branches terminated by ſpikes of white flowers, appearing great part of the year.

[3]PLUMBAGO *Roſea.*

*Roſe Plumbago.*] Hath ſlender ligneous ſtems, with gibbous or ſwelling joints; oval ſmooth leaves, having foot ſtalks; and all the branches terminated by ſpikes of red flowers, great part of the year.

All theſe plants merit culture, to encreaſe the variety of the flowery tribe; the firſt ſort for the pleaſure ground; and the other two to plant in pots, and place in the hot-houſe collection.

Their propagation is;

The firſt ſort, by parting the roots in autumn, when the ſtalks decay.

And the ſecond and third ſorts by ſeed, in a hot-bed, in the ſpring: they may alſo be tried by ſlips and cuttings, aſſiſted by artificial heat.

PLUMERIA, Red Jeſſamine.

The plants are woody, ſucculent, flowery exotics, of South America; retained here in our hot-houſe collections, for variety, riſing ſeveral feet high; ornamented with oval, oblong, and ſpear-ſhaped leaves, and beautiful monopetalous funnel-ſhaped five-parted flowers, terminating the branches in cluſters.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX, is ſmall, obtuſe, and five-parted. COROLLA, is monopetalous, infundibuliform, with a long tube, widening upwards, and the top divided into five oblong, oval, erect, ſpreading ſegments. STAMINA, five awl-ſhaped filaments, having connivent antheræ. PISTILLUM, an oblong, bifid, germen, ſcarce any ſtyle, but a double acute ſtigma. PERICARPIUM, two long, ventricoſe, acuminated, nutant, unilocular, and univalvular folliculi; having numerous oblong, imbricated ſeeds.

The ſpecies are;

[1]PLUMERIA *Rubra.*

*Red Plumeria.*] Riſes with a woody, thick, ſucculent, branching ſtem, eighteen or twenty feet high; large oval-oblong leaves, having ſhort, biglandular foot-ſtalks; and the branches terminated by cluſters of elegant, red, odoriferous flowers.

*Variety.*] With pale-red flowers.

[2]PLUMERIA *Alba.*

*White Plumeria.*] Riſes with a woody, thick, ſucculent, branchy ſtem, eight or ten feet high; ſpear-ſhaped, pointed, revolute leaves; and the branches terminated by cluſters of white odoriferous flowers, with the pedunculi having tuberoſe ſwellings above.

[3]PLUMERIA *Obtuſa.*

*Obtuſe Plumeria.*] Hath a woody, thick, ſucculent, branchy ſtem, riſing ten or twelve feet high; ſpear-ſhaped, ſhort, obtuſe leaves; and the branches terminated by cluſters of fragrant white flowers.

All theſe plants flower here in our ſtoves, in ſummer, about July and Auguſt, but never produce ſeeds in England.

They being all exotics of the hot parts of America, require the indulgence of a hot-houſe all the year in this country; and are retained here in many curious gardens, as plants of variety and ornament, for the beauty of their ſtems, leaves, and flowers, particularly the latter, which riſing in large cluſters, make a fine appearance, ſix weeks or two months in ſummer, and have great fragrance; but thoſe of the *Red Plumeria* are conſiderably the moſt beautiful.

All the three ſpecies are of a very ſucculent quality, both in ſtem, branches, and leaves; replete with a milky juice of a very cauſtic and poiſonous nature.

As being all of the above ſucculent temperature, and exotics from the hot parts of the world, they muſt be potted in light, dry, ſandy earth, and placed almoſt conſtantly in the ſtove; and ſupplied with proper waterings, which, however, as being ſucculents, muſt be applied with great moderation, particularly in winter, and they muſt be ſhifted occaſionally into larger pots.

They are propagated by ſeeds and cuttings of their branches.

By ſeed.—This is procured from the Weſt Indies; ſow it in pots of light ſandy compoſt, and plunge them in a hot-bed under glaſſes, or in the bark-bed in the ſtove; they will readily grow; and when the plants are two or three inches high, prick them in ſeparate ſmall pots; which plunge alſo in the bark-bed, &c.

By cuttings.—Any time in ſummer, take off ſome cuttings of the branches, which previous to planting, as being very ſucculent, ſhould be laid in the ſtove two or three weeks, or more, as it ſhall ſeem neceſſary, till the wound made by the amputation from the parent plant is perfectly healed and dried over, to prevent their rotting; then plant them in pots of light dry earth, and plunge them in the bark-bed, giving occaſional ſhade from the mid-day ſun; and very moderate

ſhade from the mid-day ſun; and very moderate waterings; and they will be rooted in a month or ſix weeks.

POINCIANA, Barbadoes Flower-Fence, or Spaniſh Carnation.

It conſiſts of ſhrubby flowering exotics of the Indies, proper for our hot-houſe collections; of upright branchy growth, garniſhed with decompound pinnated leaves; and the branches terminated by long ſpikes of beautiful pentapetalous flowers.

Claſs and order, *Decandria Monogynia.*

*Characters.*] CALIX, is five oblong, concave, deciduous leaves. COROLLA, is pentapetalous, four of the petals roundiſh, and nearly equal, and the fifth is larger, deformed and crenated. STAMINA, ten very long, briſtly, declinated filaments, having oblong antheræ. PISTILLUM, a long, awl-ſhaped, declinated germen, long ſtyle, and obtuſe ſtigma. PERICARPIUM, an oblong compreſſed pod, having tranverſe partitions, containing many plane nearly oval ſeeds.

The chief ſpecies are,

[1]POINCIANA *Pulcherrima.*

*Fair Poinciana, or Double Spined Barbadoes Flower-Fence.*] Hath a ſhrubby, upright, ſtraight ſtem, branching ten or twelve feet high, armed with double ſpines, at each joint; large, decompound, pinnated leaves, of numerous, oblong, obtuſe folioles; and the branches terminated by long looſe ſpikes, of large golden, yellow, beautifully variegated flowers.

[2]POINCIANA *Bijuga.*

*Bijugated Single-ſpined Poinciana.*] Riſes with a ſhrubby, upright, ſtraight ſtem, dividing into ſpreading branches, armed with ſhort ſingle ſpines; decompound pinnated leaves, of numerous, roundiſh, emarginated lobes; and the branches terminated by looſe ſpikes, of yellowiſh purple flowers.

[3]POINCIANA *Elata.*

*Spineleſs Poinciana.*] Hath a ſhrubby, ſpineleſs ſtem and branches; bipinnated leaves, of many ſmall oblong, oval, entire lobes; and looſe ſpikes of flowers, having leathery cups, and very long, dark purple filaments.

Theſe beautiful ſhrubs flower here in our ſtoves, in autumn, or beginning of winter, very ornamentally, imparting an agreeable fragrance; but are not ſucceeded by ripe ſeed in England.

As they are exotics of both Indies, they muſt be always kept in pots, and placed conſtantly in the hot houſe.

Their propagation is by ſeed, which we receive annually from the Weſt Indies. Sow it in pots of light earth, and plunge them in any hot-bed, or in the ſtove bark-bed; they will ſoon come up abundantly, which when about three or four inches high, prick them into ſeparate ſmall pots, plunging them alſo in the bark-bed, and, giving occaſional waterings, and they will make great progreſs. As they advance in growth, ſhift them with balls into larger pots; and grant them ſupplies of water, plentifully in ſummer, but always very moderate in winter. Thus they will grow freely, advance faſt in height, and in a few years begin to exhibit their elegant flowers.

POLEMONIUM, Greek Valerian, or Jacob's Ladder.

The plants are herbaceous, fibrous-rooted, flowery perennials, for the pleaſure-ground; ſending up annual ſtalks from about ten or twelve, to eighteen inches high, adorned with pinnated leaves, and terminated by bunches of monopetalous, rotated, five-parted flowers.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX, is monopetalous, five-parted, and permanent. COROLLA, is monopetalous, and wheel-ſhaped, divided at top into five parts. STAMINA, five ſhort inclined filaments, having roundiſh antheræ. PISTILLUM, an oval acute germen, filiform ſtyle, and a trifid revolute ſtigma. PERICARPIUM, a three-cornered, trivalved, trilocular capſule, having many irregular ſeeds.

The moſt noted ſpecies are,

[1]POLEMONIUM *Cæruleum.*

*Blue Greek Valerian*, or *common Jacob's Ladder.*] Hath fibrous roots, crowned by a cluſter of pinnated many-lobed leaves, and upright, channelled, hollow ſtalks, about half a yard high; garniſhed with pinnated leaves, of ſeveral pair of alternate lobes, terminated by an odd one; and the ſtalks terminated by cluſters of blue flowers, having the calix larger than the corolla.

*Varieties.*] White-flowered—variegated-flowered—woolly-cupped.

[2]POLEMONIUM *Reptans.*

*Creeping Greek Valerian.*] Hath very creeping roots, upright branchy ſtalks, about a foot high, pinnated leaves, of ſeveral pair of narrow alternate lobes; and the ſtalks terminated by bunches of light blue flowers, nodding or drooping downwards.

Both the ſpecies flower in May and June;

the flowers are always collected into bunches; each flower is of one petal, divided above into five roundiſh ſegments; and are ſucceeded by plenty of ſeed in autumn.

Theſe plants are hardy: the firſt grows wild in thickets, in ſome parts of England, and other parts of Europe; and the ſecond in Virginia; and both the ſorts are cultivated in gardens for ornament, in the flower-compartments of the pleaſure-garden; are abiding by the roots, and ſend up ſtalks annually in ſpring, for flowering.

Their propagation is by ſeed, and by parting the roots; but the ſeedlings are generally the fineſt plants: parting the roots, however, is the only certain method to continue the variegated kind, and any other ſingular variety.

By Seed.—Sow it in ſpring, in any bed or border of common earth, and rake it in; the plants will ſoon come up abundantly, which, when two or three inches high, prick out a quantity in nurſery-rows, ſix inches aſunder, to remain till autumn; then may be tranſplanted, where they are finally to remain; and they will flower the following ſummer.

By parting the Roots.—Autumn, when the ſtalks decay, or early in ſpring, before new ones begin to ſhoot, is the proper time; and is performed in the common way.

POLYANTHES, Tuberoſe, or Indian tuberous Hyacinths.

It is an herbaceous, bulbo-tuberous-rooted, beautiful flowery perennial, an exotic of India, riſing with annual ſtalks, three or four feet high, terminated by a long ſpike of many large monopetalous, ſix-parted, liliaceous flowers, of great beauty, and delightful fragrance.

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX, none. COROLLA, is monopetalous, infundibuleforme, with an oblong incurved tube, divided above into ſix oval ſpreading ſegments. STAMINA, ſix thick obtuſe filaments, terminated by very long linear antheræ. PISTILLUM, a roundiſh germen, ſlender ſtyle, crowned by a thick trifid ſtigma. PERICARPIUM, a roundiſh, obtuſely trigonal capſule, with three cells, having numerous, plane, ſemi-orbicular ſeeds, in a double range.

There is but one ſpecies, conſiſting of ſome varieties, all of which being exotics of tender quality, requiring aid of artificial heat, under ſhelter of frames and glaſſes, &c. to bring them to flower in perfection in this country.

The ſpecies is,

POLYANTHES *Tuberoſa.*

*Polyanthes or Tuberoſe.*] Hath an oblong, bulb-like, tuberous, white root; crowned with a few long very narrow leaves; amidſt them an upright, ſtraight, firm ſtem, three or four feet high, terminated by a long ſpike of large white flowers, arranged alternately.

*Varieties.*] Common tuberoſe, with ſingle flowers,—double flowered,—dwarf ſtalked,—variegated leaved.

They all flower here in June, July, and Auguſt: the flowers are funnel or bell-ſhaped; garniſh the upper part of the ſtem, in a long ſpike, conſiſting of from ten to twenty or more ſeparate flowers, in alternate arrangement; the lower flowers opening firſt, which are ſucceeded by thoſe above, in regular order, making in the whole a moſt beautiful appearance, highly enriched with a moſt fragrant odour.

The common ſingle-flowered Tuberoſe, is the ſort the moſt commonly cultivated, as it generally blows the moſt freely, and poſſeſſes the fineſt fragrance.

The double flowered kind, alſo highly merits culture, as when it blows fair, it makes a ſingularly fine appearance.

The dwarf, and the variegated kind, are inferior to the other two, but may be cultivated for variety.

All the varieties being exotics from warm countries, although they are made to flower in great perfection in our gardens, by aſſiſtance of hot-beds, they will not proſper in the open ground, and do not encreaſe freely in England; ſo that a ſupply of the roots is imported hither annually from Genoa, and other parts of Italy, by moſt of the eminent nurſery and ſeedſmen, and the Italian warehouſe-keepers; generally arriving in February or March, time enough for the enſuing ſummer's bloom; and are ſold commonly at the rate of twelve or fifteen ſhillings per hundred, being careful always to procure as large roots as poſſible, for on this depends the ſucceſs of having a complete blow.

They requiring artificial heat to blow them in this country; are planted in pots, and plunged in a hot-bed, under a deep frame, furniſhed with glaſs lights; or placed in a hot-houſe, where they may be blowed to great perfection, with little trouble.

The principal ſeaſon for planting them is March and April; obſerving, however, that in

in order to continue a long ſucceſſion of the bloom, it is proper to make two or three different plantings, at about a month interval; one in March, another in April, and a third the beginning of May; whereby the blow may be continued from June until September; obſerving, as above mentioned, they may be flowered either by aid of a common dung, or bark hot-bed, or in a hot-houſe; and the following is the methods.

Firſt by common Hot-beds.—In March or April, &c. as above obſerved, make a moderately ſubſtantial hot bed of dung or tan, in dimenſions ſuitable to any of the deepeſt hot-bed frames; and when the bed is become of a proper temperature of heat, prepare to put in the roots, previouſly planting them in pots, as directed below; obſerving, that if a dung hot-bed, lay in ſix inches depth of earth, or old tan, in which to plunge the pots, but if of bark or tan, no earth is neceſſary, as the pots may be plunged immediately into the bark.

The hot-bed being ready, and having procured the roots, and a due quantity of pots twenty fours one for each root; then having light rich earth, fill the pots therewith; and, after having diveſted the roots of all looſe outer ſkins, and all off-ſets, plant one in each pot, in depth, ſo as the top of the root be about an inch below the ſurface of the earth: this done, directly plunge all the pots in the hot-bed cloſe together, ſo as the bed may contain the number required; and as ſoon as they are all thus placed, put on the lights of the frame.

Being thus planted and placed in the hot-bed, obſerve their culture as follow: admit a portion of freſh air daily, by tilting the upper ends of the lights; but keep them cloſe down on nights: give alſo moderate waterings, which however apply very ſparingly, till the roots begin to ſhoot; then repeat the waterings freely every two or three days, or as you ſhall ſee occaſion; likewiſe obſerving, that when the ſhoot begins to advance, to admit freſh air more freely, in proportion to ſtrengthen the ſtems, according as they advance in height: and when they have riſen near the glaſſes, it is proper to deepen the frame, either by the addition of another at top, or by raiſing it at bottom ſix or eight inches, in order to give the ſtems ſufficient room to ſhoot to their full ſtature, repeating this, once or twice, as the growth of the plants renders it neceſſary, ſtill alſo indulging them with plenty of water, and a large portion of freſh air daily, either by tilting the lights as above-ſaid, or that when the plants are advanced ſome tolerable height, and the warm ſeaſon alſo a little advanced, the lights may be taken away entirely occaſionally in fine mild days, which will ſtrengthen and inure them gradually to the full air: but always draw the lights on again towards the evening, or at the approach of a ſharp air, cold blaſt, or heavy rains; obſerving, towards the middle or latter end of May, or beginning of June, according to the temperature of the ſeaſon, to begin to expoſe them fully, only giving occaſional ſhelter in cold nights, or very wet weather, either of the glaſſes, or mats ſupported on hoop arches, till they begin to flower, which will be about the middle or latter end of June, or beginning of July; when the plants in their pots may be removed where wanted; either to adorn any of the garden compartments, or any apartment of the habitation.

Place to each plant a tall ſtraight ſtake; to which faſten the ſtem for ſupport.

They muſt ſtill be duly ſupplied with water all the time of their bloom; they will require it every other day, or oftner, in very hot dry weather.

Obſerve, as aforeſaid, that, in order to continue a long ſucceſſion of bloom of this flower, two more parcels of roots ſhould be planted; one in April, about a month after the firſt, and another parcel in May; each planting to be in pots, as already directed; and plunged in a hot-bed under ſhelter of frames and glaſſes, or an awning of mats every night and cold weather: thoſe however planted late in April or in May, will need only a moderate hot bed, juſt to ſet the roots agoing at firſt, and will ſucceed tolerably, with only a protection of hoop arches acroſs the bed, for the ſupport of mats occaſionally in cold nights.

Sometimes roots planted in May in the full ground, will ſhoot tolerably ſtrong, and produce flowers in autumn.

It is however the moſt eligible way to allow them the aſſiſtance of a hot-bed as above, otherwiſe of a hot-houſe, as directed below; for one or other of theſe aids is the only method by which we can blow theſe flowers in full perfection.

*By aſſiſtance of a Hot-houſe.*] Where there is the convenience of a hot-houſe, we may blow tuberoſes in great perfection with very little trouble. Plant the roots any time in

ſpring, in pots as above adviſed; and if there is room in the bark-bed, plunge them to their rims; if not, place the pots any where towards the front of the houſe; but they will ſhoot more freely if plunged in the bark-bed; give occaſional waterings as directed in the hot-bed culture, and they will ſhoot and flower ſtrong in their due ſeaſon; and by a repetition of planting a few at three or four weeks interval, you may continue a bloom from April or May, until autumn.

*Method of Propagation.*

With reſpect to the propagation of theſe plants, it is principally by off-ſets of the roots.

The blowing roots that are brought annually from abroad, for ſale, are often furniſhed with off-ſets, which ought to be ſeparated, previous to planting; thoſe alſo that are planted here in our gardens, frequently furniſh off-ſets, fit for ſeparation in autumn when the leaves decay; they muſt then be preſerved in ſand all winter in a dry ſheltered place; and in the beginning of March, plant them either in a bed of light dry earth in the full ground, or to forward them as much as poſſible, allow them a moderate hot-bed, and in either method indulge them with ſhelter in cold weather, either of a frame and lights, or arched with hoops and occaſionally matted; but let them enjoy the full air in all mild weather, giving alſo plenty of water in dry weather, during the ſeaſon of their growth in ſpring and ſummer.

Thus let them grow till their leaves decay in autumn; then take them up, clean them from earth, and lay them in a box of dry ſand to preſerve them till ſpring, at which time, ſuch roots as are large enough to blow may be planted and managed as already directed, and the ſmaller roots plant again in a nurſery-bed, to have another year's growth; afterwards plant them for flowering.

POLYGONUM, knot-graſs.

This genus conſiſts of herbaceous perennials and annuals, for adorning the pleaſure-garden, and for medical and other uſes; riſing from about ſix inches to ten feet high, in different ſorts, garniſhed with oval and ſpear-ſhaped leaves, and terminated by branchy ſpikes of ſmall but numerous apetalous flowers.

Claſs and order, *Octandria, Trigynia.*

*Characters.*] CALIX, is divided into five oval ſegments, coloured within, and permanent. COROLLA, none, there being no petals. STAMINA, eight, very ſhort filaments, crowned with roundiſh antheræ. PISTILLUM, a triquetrous germen, three very ſhort ſtyles and ſimple ſtigmas. PERICARPIUM, none, each floret having a ſingle triquetrous ſeed wrapped in the permanent calix.

The principal ſpecies for our purpoſe are two perennials, and two annuals.

*Perennial Kinds.*

Theſe are cultivated in many gardens for variety, but their chief merit is for medical uſe.

[1]POLYGONUM, *Biſtorta.*

*Biſtort or Greater Snakeweed.*] Hath a thick oblique intorted root, blackiſh without, and red within; a ſimple round ſlender ſtem near two feet high, oval leaves, having decurrent foot-ſtalks, and the ſtalk terminated by thick ſhort ſpikes, of whitiſh-red flowers.

[2]POLYGONUM, *Vivaparum.*

*Vivaparous Polygonum*, or *ſmaller Biſtort.*] Hath a thickiſh root, a ſimple ſlender ſtem, half a foot high, ſpear-ſhaped leaves, and the ſtalk and branches terminated by long ſpikes of whitiſh-red flowers.

Both theſe perennials flower in May and June, ſucceeded by ripe ſeeds in Auguſt.

They grow wild in England, &c. the firſt in moiſt places, the other in mountainous ſituations; are in great eſtimation for medical purpoſes; the root being the part uſed.

*Annual Kinds.*

The firſt of theſe is a noble ornamental plant, commonly called *Perſicaria*; the other is an eſculent.

[3]POLYGONUM *Orientale.*

*Oriental Polygonum, commonly called Perſicaria.*] Hath fibrey roots, an upright, robuſt, ſtrong, jointed ſtem, riſing eight or ten feet high, dividing at top into ſeveral branches; very large oval-lanceolate alternate leaves, on broad foot-ſtalks half ſurrounding the ſtem; and all the branches terminated by long, ſlender, hanging ſpikes of reddiſh-purple heptandrous and digynious flowers, from July till October.

This is a noble annual for the decoration of the large compartments of the pleaſure-garden.

[4]POLYGONUM *Fagopyrum.*

*Fagopyrum, Buck-wheat*, or *Brank.*] Riſes with an upright ſmooth branchy ſtem, from about a foot and a half to a yard high, heart-ſhaped-ſagittated leaves, and the branches terminated by cluſters of whitiſh flowers, ſucceeded

ceeded by large angular ſeeds; excellent for feeding pigeons, and moſt ſorts of poultry.

All theſe plants are hardy, and ſucceed in almoſt any ſoil and ſituation; the two firſt are perennial in root, and the third and fourth are annual, wholly decay at the end of ſummer, or early in winter.

As to their merit in gardening, the following are the particulars:

The firſt two ſorts are retained in ſome curious gardens, for variety; but their chief merit is for medical purpoſes: they are powerful aſtringents, and are uſed both internally and externally; eſteemed very efficacious in hæmorrhages, and other fluxes; and good to heal ſore mouths.

Third ſort *Oriental Polygonum*, or *Perſicaria*, is a moſt elegant annual for the embelliſhment of the pleaſure-ground; it aſſuming a majeſtic tree-like growth by its erect luxuriant ſtem, and branchy head; which being garniſhed with noble large foliage, and numerous pendulous ſpikes of flowers, in conſtant ſucceſſion three or four months, exhibits a very ornamental appearance from June or July, until October, and is ſo eaſy of culture, that from its ſcattered ſeeds in autumn young plants riſe ſpontaneouſly in abundance the enſuing ſpring, and ſhoot up ſo rapidly, as to attain ſix or eight feet ſtature by July, when they generally begin flowering, and continue till attacked by the froſt, then totally periſh; ſo that a freſh ſupply muſt be raiſed from ſeed annually.

The fourt ſort (*Buck-Wheat*) is a ſort of corn, and is frequently cultivated both by way of fodder, cutting its ſtalks while young and green to feed cattle; and for its grain to feed pigeons, poultry, hogs, &c. it flouriſhes in any ſoil and ſituation, but generally thrives beſt in light dry earth; and the drieſt ſeaſons ſeldom retards its growth.

*Method of propagating all the Sorts.*

The firſt and ſecond ſort are eaſily propagated in plenty, by parting the roots in autumn.

The third ſort, *Oriental Polygonum*, being annual, is always propagated from ſeed annually; either in the full ground, or by aid of hot-beds.

By ſowing in the full ground—Some ſeed may be ſowed both in autumn, as ſoon as ripe, and in ſpring, about the borders, in patches; the autumn-ſowed plants, although they rather riſe ſparingly, yet thoſe that ſucceed, generally riſe earlier and ſtronger in the ſpring following, than the ſpring-ſowed plants; it is however proper to ſow in both ſeaſons; ſome of which may be in a warm border for tranſplanting; and others about the borders in patches, finally to remain, covering the ſeed half an inch deep; they will come up about April or May, if a fine ſeaſon; which, when three or four inches high, thoſe deſigned for tranſplantation ſhould be planted out ſingly, about the different compartments; and of thoſe ſowed in patches, thin out the weakeſt in moiſt weather, leaving only one of the ſtrongeſt plants in each patch; and thoſe thinned out, may alſo be planted ſingly where they may be required. According as the plants in general advance ſome conſiderable height, place a ſtout ſtake to each for ſupport, which is all the culture they require; and they will flower in due ſeaſon, and furniſh plenty of ſeed.

From the ſcattered or ſelf-ſown ſeed in autumn, many young plants often riſe in ſpring, and flouriſh without any trouble.

By hot-beds.—As ſometimes in bad ſeaſons, or in cold wet ſoils, the ſowings in the full ground either riſe but ſparingly, or not till late in ſpring, probably May or June; it is therefore proper alſo to ſow ſome in a hot-bed in March, with other annuals, ſuch as African and French marigolds, China aſters, &c. for tranſplantation, which will forward them conſiderably; but they muſt be planted out in May or June before they draw up; or if previouſly pricked upon another hot-bed, ſix or eight inches aſunder, and arched over with hoops, and ſheltered with mats in cold nights; and here to have three or four weeks growth, it would bring them more conſiderably forward, and they may readily be moved with large balls of earth about their roots, for their final tranſplantation.

The fourth ſpecies, *Buck-Wheat*, is alſo propagated by ſeed annually, in any open ground, which ſow in April or May, either broad-caſt and raked, or harrowed in, or in ſhallow drills, ten or twelve inches aſunder, the plants will ſoon come up, and be fit to mow for cattle in eight or ten weeks, or if to ſtand, will produce a crop of grain in three or four months.

POPULUS, Poplar-tree; comprehending the Abele, and Aſpen-tree, &c.

This genus is compoſed of hardy deciduous trees, valuable for ornamental and foreſt-tree plantations; they riſing to a conſiderable height

height and magnitude, garniſhed with large roundiſh angulated and heart-ſhaped ſimple leaves, and dioecious apetalous flowers, collected into long amentums.

Claſs and order, *Dioecia*, *Octandria*.

*Characters.*] CALIX, male and female flowers on ſeparate trees, collected into oblong, looſe, imbricated amentums, compoſed of oblong ſcales, each ſcale forming a cup to a ſingle floret. COROLLA, no petals, but a monophyllous nectarium. STAMINA, eight filaments, having large four-cornered antheræ. PISTILLUM, an oval acuminated germen, very ſhort ſtyle and quadrifid ſtigma.—PERICARPIUM, an oval bilocular capſule, and numerous oval pappous ſeeds.

There are five ſpecies, all of the tree kind, deciduous, and of hardy temperature; will thrive in almoſt any ſoil and ſituation, but are the moſt proſperous in moiſt grounds, particularly the firſt three ſorts, which thrive exceedingly in marſhy or boggy land, or any watery ſituation.

The ſpecies are.

[1]POPULUS *Alba.*

*White Poplar, commonly called Abele-tree.*] Riſes with an upright ſtraight trunk, and regular branchy head, to a great height, having a whitiſh ſmooth bark, roundiſh leaves, indented into ſeveral angles, of a dark-green above, and are downy and white underneath.

*Compriſes theſe Varieties.*] Large-leaved White Poplar — ſmall-leaved — variegated-leaved.

[2]POPULUS *Nigra.*

*Black Poplar.*] Riſes with a ſtraight trunk, and full branchy head, to a conſiderable height; having deltoide, heart-ſhaped, acuminate, ſerrated, light green leaves.

[3]POPULUS *Tremula.*

*Trembling Poplar, or Aſpen-tree.*] Riſes with an upright large trunk, and a full branchy head, many feet high, having a grey bark, roundiſh leaves indented into angles, ſmooth on both ſides, with a conſtant tremulous motion.

The leaves of this ſpecies having long ſlender foot-ſtalks, are rendered ſo very tremulous, that they have a conſtant wavering or trembling motion; hence the name *Populus Tremula.*

[4]POPULUS *Balſamifera.*

*Balſamiferous Carolina Poplar.*] Riſes with an upright large trunk, and a large regular branchy head, to a great height, having a whitiſh ſmooth bark, and the young ſhoots cornered; large, almoſt heart-ſhaped, indented, light ſhining-green leaves.

This is a very elegant ſpecies of *Populus*, of very free growth, and the leaves remarkably large and ornamental.

[5]POPULUS *Heterophylla.*

*Heterophyllous Virginia Poplar.*] Riſes to a great height, having large heart-ſhaped leaves, hairy at their firſt appearance.

The two following ſorts are alſo ſuppoſed of this genus.

*Tacamahacca Poplar, commonly called Tacamahacca or Balſam-tree.*] Is of moderate growth, branching out into a full regular head, having middling-ſized leaves, ſome oval, others heart and ſpear-ſhaped, whitiſh underneath, and of a very balſamic odoriferous nature; good to cure green wounds.

*Lombardy Poplar.*] Riſes with a very ſtraight ſtem, branching erectly, forming a fine regular head, and grows to ſome conſiderable height; having large, roundiſh, acuminate, ſmooth, light-green leaves—is a remarkable faſt ſhooter, and highly merits culture.

In all theſe trees the leaves are univerſally of the ſimple kind, moderately large, and form a diſtinguiſhable diverſity in plantations in ſummer; they expand in ſpring and decay in autumn, like the reſt of the deciduous tribes.

All the ſorts flower annually in the ſpring, but the flowers being only ſmall katkins, make no ornamental ſhow; they are all of the claſs *Dioecia*, *i. e.* male and female on ſeparate trees, collected into oblong imbricated amentums or katkins, two or three inches long, the flowers being ſmall florets without petals, ſituated under the ſcales of the amentum, appear commonly in March or April; the males come out firſt, and the females in a week after, and in about five or ſix weeks are ſucceeded by ripe ſeed, which is frequently diſſeminated by the winds all around to a conſiderable diſtance, and often productive of many young plants.

Theſe trees are all of remarkably quick growth, often making ſhoots whilſt young, from three or four to eight or ten feet long in one ſummer, eſpecially in moiſt ſoils, in which they principally delight, and make the greateſt progreſs.

As to their uſes in gardening, the following are the particulars.

They may be employed occaſionally for ornament in out-grounds, not near fine lawns

and

and walks, on account of the great litter the falling of their katkins occaſion; but are excellent for planting towards the boundaries of parks, paddocks, and fields, the ſides of rivers and brooks, and to interſperſe with other trees in large plantations. The White Poplar, or Abele, in particular, alſo the Carolina, Tacamahacca, and Lombardy Poplar, are very ornamental trees, and are finely adapted to be employed in aſſemblage in forming large avenues, open groves, and clumps in parks, &c. all the ſorts may be employed to advantage in any large tracks of plantation.

If required to ornament any marſhy or boggy grounds with plantation, no trees are better adapted for that uſe than Poplars, eſpecially the firſt three ſpecies, all of which thrive remarkably in moiſt or boggy ground, and will readily grow by cuttings, either of young ſhoots or in truncheons.—See their *Propagation.*

As foreſt or timber-trees, the following three ſorts, White, Black, and Tremulous Poplar are proper to be employed for that purpoſe, eſpecially in any moiſt boggy ground, where few other trees will thrive: they however will ſucceed in any other common ſoil poor or rich, but in a boggy or very moiſt ground they will be ſo expeditious in growth as in ſix or ſeven years they will afford a conſiderable advantage, eſpecially if planted cloſe to allow of thinning, for a fall of poles, ſpars, and for fire-wood, &c. beſides leaving a ſufficient number of ſtandards at proper diſtances to grow up to timber, and the ſtools of the firſt fall remaining, ſhoot up again and afford a fall every four or five years, ſtill leaving the timber ſtandards.

Any boggy or marſhy land may be improved to much advantage by coppices of theſe trees, to cut every four, five, or ſix years for poles, and other ſmall purpoſes; being planted in rows a yard aſunder, and in ſeven years they will be fit to cut for many ſmall uſes, and the ſtools ſhooting up again ſtrong, will afford a cutting every four or five years after. See PLANTATIONS.

For all the above purpoſes young trees are propagated and raiſed, as directed below in their propagation.

*Method of Propagation.*

All the ſorts of *Populus* are eaſily propagated by cuttings, layers, and ſuckers.

By Cuttings.—October and November is a good ſeaſon for this work, or even any time in winter until March, in open weather. This is the moſt expeditious mode of propagating all theſe trees, for cuttings thereof grow freely without any trouble; either cuttings of the young year-old ſhoots, a foot and half long, planted a foot deep, or large truncheons of two, three, or more years growth, from about a yard to five or ſix feet long, planted in moiſt places: though theſe large cuttings or truncheons are not proper for any general plantation, only juſt in ſome particular parts, in a boggy or watery ſituation, where ſhade and ſhelter may be required as ſoon as poſſible, in which may be planted a quantity finally to remain, planting them two or three feet deep.

But, in order to raiſe plants for any regular plantation, or for a quantity of handſome ſtandards, it is the moſt eligible to raiſe them principally from young cuttings of one year's growth, or two at moſt; procure therefore a quantity of theſe young cuttings, about fifteen or eighteen inches long, and plant them in nurſery-rows a yard aſunder, placing each cutting two parts of three in the ground, and about a foot diſtance in the lines, they will readily take root, and make good ſhoots the following ſummer, being careful to trim off ſtraggling laterals, in order to encourage the leading ſhoot to grow ſtraight, and aſpire more expeditiouſly in height; and after having from two to four or five years growth here, they may be tranſplanted finally for the purpoſes above mentioned.

By Layers.—In autumn chuſe any lower young ſhoots conveniently ſituated, lay them by ſlit-laying, they will be well rooted and fit to tranſplant by autumn following, in nurſery-rows to have two or three years growth.

By Suckers.—Some of the ſorts ſend up abundance of ſuckers from the roots, which may be taken up after the fall of the leaf, and planted in nurſery-rows, as directed for the cuttings; they will form good plants in two years.

The plants raiſed by all the above methods, will, after having obtained from two or three to five or ſix years growth, be of proper ſize for furniſhing any of the aforementioned plantations.

PORTULACA, Purſlane.

Two ſpecies are found in our gardens; one a low herbaceous ſucculent annual, a ſallad herb; the other a low ſhrubby perennial for the

the green-houſe, or ſtove collection, both riſing only ſix or eight inches high, garniſhed with ſmall ſucculent leaves, and ſmall pentapetalous flowers.

Claſs and order, *Dodecandria Monogynia.*

*Characters.*] CALIX is ſmall, bifid, and placed on the germen, and permanent.—COROLLA, five plane, obtuſe, erect petals.—STAMINA, from twelve to nineteen ſhort capillary filaments, having ſimple antheræ.—PISTILLUM, a roundiſh germen, ſhort ſimple ſtyle, and five oblong ſtigmas.—PERICARPIUM, an oval covered capſule, of one cell, having many ſmall ſeeds.

There are ſeveral ſpecies, but the two following are the moſt noted.

1 PORTULACA *Oleracea* (*Annual.*)

*Common culinary Purſlane.*] Riſes with herbaceous, low, ſucculent, branchy ſtalks, ſix or eight inches high, garniſhed with wedge-ſhaped, thick, ſucculent leaves, and ſmall cloſe-ſetting flowers.

*Compriſes two Varieties.*] Green Purſlane, having deep-green leaves.—Golden Purſlane, having yellow leaves; both the varieties riſing from the ſame ſeed.

Theſe herbs are excellent to mix in ſummer ſallads.

PORTULACA, *Anacampſeros* (*Perennial.*)

*Anacampſeros, or Shrubby Cape Purſlane*] Riſes with a ſhrubby branchy ſtalk, about ſix inches high, oval, gibbous, ſucculent leaves, and the ſtalks terminated by ſmall cluſters of red flowers.

Both theſe plants are of a ſucculent nature; the firſt is an herbaceous annual, for culinary uſes; and the ſecond a ſhrubby perennial, cultivated by the curious for variety; are both exotics of a tender quality, of the temperature of green-houſe and ſtove plants.

*The common Culinary Purſlane* is raiſed annually from ſeed for ſummer uſe, both as a ſallad and pot-herb, is of a moiſt cold nature, and an excellent ingredient to mix in ſummer ſallads, but not proper for winter uſe; the plant being tender muſt be raiſed either in a hot-bed, or in a warm border, in which it will not ſucceed before April or May.

The ſhrubby ſort muſt be kept in pots of dry ſoil, and placed in the hot-houſe collection.

*Method of Propagation.*

The propagation of the *Common Purſlane* is by ſeed annually in ſpring and ſummer, for, in order to continue a ſucceſſion of young plants for uſe, it is proper to ſow ſeveral different times from March or April until June, July, or Auguſt, at about three weeks interval, obſerving, if required, to have it early: the firſt ſowing may be performed in a ſlender hot-bed in February or March, and the other ſowings may be in a warm border of lightiſh earth in April and May; though, as the warm ſeaſon advances, the ſowings may be in any open bed or border of light ground. The ſeed may either be ſowed in ſhallow drills, and covered about a quarter of an inch deep, or all over the ſurface, covering it that depth, or may be lightly raked in: give occaſional waterings in dry weather, both before and after the plants come up, which are to remain where ſowed, and they will be fit to cut for uſe in three or four weeks. In gathering them for uſe, cut off their young tops with a knife, they will ſhoot out again after each cutting.

To ſave ſeed of this ſort leave ſome ſtrong plants of the April ſowing, they will flower and ripen ſeeds freely towards autumn.

The ſecond ſort is propagated by cuttings, any time from April till June or July; plant them in pots of light dry earth, and if plunged in the bark-bed they will root the ſooner, giving occaſional ſhade till rooted, and moderate watering.

POTENTILLA, *Cinquefoil.*

The genus conſiſts of one noted ſhrubby ſpecies, and near thirty herbaceous kinds; the former is a hardy deciduous flowering ſhrub for the pleaſure-ground; and the others having but little merit as garden plants, only a few of them are ſometimes admitted in the herbaceous collection for variety. All the ſorts are of moderate growth, ſome growing erect, others trailing, and garniſhed with pinnated and other compound leaves, and pentapetalous flowers.

Claſs and Order, *Icoſandria Polygynia.*

*Characters.*] CALIX is menophyllous, half cut into ten parts, alternately ſmaller, and reflexed.—COROLLA, five, roundiſh, ſpreading petals, inſerted into the calix.—STAMINA, twenty awl-ſhaped ſhort filaments, having elongated-lanulated antheræ.—PISTILLUM, numerous ſmall germina collected into a head, many ſlender ſtyles, having obtuſe ſtigmas.—PERICARPIUM, none, a head of ſeeds placed on the common receptacle, which lodges in the calix.

There are about ſix or ſeven ſpecies found in our gardens, one of which is ſhrubby, the others herbaceous.

*Shrubby*

*Shrubby kind.*

[1]POTENTILLA *Fruticosa.*

*Shrubby Potentilla, commonly called Shrub Cinquefoil.*] Riſes with a ſhort ſhrubby ſtem, dividing into a branchy, full head, three or four feet high; cloſely garniſhed with pinnated leaves, of five, oblong, narrow, acute-pointed folioles, pale green above, and whitiſh underneath; and the branches terminated by cluſters of large, ſpreading, yellow flowers.

This is a beautiful deciduous flowering ſhrub, worthy a place in every curious collection.—It grows wild in Yorkſhire and other northern parts of England, &c. but has been long a reſident of gardens as an ornamental ſhrub.

*Herbaceous perennial kinds.*

There are about five or ſix of theſe kinds common to our gardens; the firſt of which grows wild in England, and is rarely cultivated; the others are of foreign growth in different parts of Europe.

[2]POTENTILLA *Reptans.*

*Creeping common five-leaved Potentilla, or five-leaved graſs.*] Hath a thick fibrey root, ſlender, trailing, repent ſtalks, digitated, five-lobed, petiolated leaves, and yellow flowers, ſingly.

[3]POTENTILLA *Rupeſtris.*

*Mountain upright Cinquefoil.*] Hath upright ſtalks, eight or nine inches high; pinnated, five and three-lobed, alternate leaves, having oval crenated lobes, and the ſtalks terminated by ſmall white flowers.

[4]POTENTILLA *Recta.*

*Erect, ſeven-lobed, Yellow Cinquefoil.*] Hath erect ſtalks, ſeven-lobed leaves; having the lobes ſpear-ſhaped and ſerrated; green and hairy on both ſides, and the ſtalks terminated by corymboſe cluſters of yellow flowers.

[5]POTENTILLA *Fragaroides.*

*Straberry-like trailing Potentilla.*] Hath a ſomewhat tuberous root, furniſhed with many long fibres, long trailing ſhoots, rooting at the joints; pinnated, moſtly three-lobed leaves, having oval lobes, with the extreme lobe the largeſt, and cluſters of ſmall white flowers.

This ſpecies bears a great reſemblance to the ſmall ſterile ſtrawberry plants.

[6]POTENTILLA *Argentea.*

*Silvery upright Potentilla.*] Hath upright ſtalks, branching a foot high; and five-lobed leaves, having the lobes wedge-ſhaped, cut on the edges, hoary and white underneath, and the branches terminated by ſmall yellow flowers.

All theſe *Potentillas* flower in June and July; the flowers are compoſed each of five roundiſh petals, and about twenty ſtamina.

They are all very hardy plants, and may be employed in the different compartments of the pleaſure-ground. The firſt ſpecies in particular, *Shrubby Potentilla*, merits a place in every ſhrubbery towards the front of the clumps, &c. and the herbaceous kinds may be diſperſed about the common compartments to increaſe the variety.

Their propagation is very eaſy.

The *Shrubby Potentilla* may be propagated abundantly by ſuckers, layers, and cuttings; all of which will readily grow, and make plants in one year, which after having two or three years growth in the nurſery, will be fit for any of the ſhrubbery compartments.

All the herbaceous kinds may be propagated by parting the roots in autumn or ſpring, or by ſeed in any of thoſe ſeaſons.

POTERIUM, Garden Burnet.

It conſiſts of two herbaceous and one ſhrubby perennial. Of the former, one is a kitchen-garden herb, the other for the pleaſure-garden, and the ſhrubby kind for the green-houſe collection; they all riſing with upright ſtalks from about a foot and a half to a yard high, in different ſorts; having pinnated leaves, and the branches terminated by ſpikes of quadripartite monoecious flowers.

Claſs and order, *Monoecia Polyandria.*

*Characters.*] CALIX, male and female flowers in the ſame ſpike, each floret having cups formed of three oval leaves. COROLLA, in the males is quadripartite, the ſegments oval, concave, and permanent, and in the females is monopetalous, and wheel-ſhaped with a ſhort tube, divided above into four oval, plane, perſiſtent ſegments. STAMINA, numerous capillary filaments, and didymous antheræ. PISTILLUM, two oval-oblong germens, two hair-like, coloured ſtyles, and pencil-ſhaped, coloured ſtigmas. PERICARPIUM, a berry incloſed in the indurated corolla, having two ſeeds.

*Herbaceous kinds.*

The firſt of theſe herbaceous kinds is an an eſculent herb, the other for variety in the pleaſure garden.

[1]POTERIUM *Sanguiſorba, (Perennial.)*

*Sanguiſorba, or common garden Burnet.*] Hath fibrey perennial roots, crowned by a large tuft of pinnated leaves, of ſix or ſeven pair of ſawed lobes, terminated by an odd

one; upright angular ſtalks, dividing, and branching a foot and a half high, terminated by oblong ſpikes of purpliſh red flowers.

This ſpecies grows wild in England, in chalky ſoils, but has been long cultivated as a choice ſallad-herb for winter and ſpring uſe, it being of a warm nature; the young leaves are the uſeful parts.

It is perennial in root, and retains its radical leaves all the year, but the ſtalks are annual.

[2]POTERIUM *Hybridum.*

*Hybrid Agrimony-leaved Montpelier Burnet.*] Riſes with upright taper, cloſely gathered ſtalks two feet high; pinnated odoriferous leaves of three or four pair of ſawed lobes, terminated by an odd one; and the ſtalks terminated by long foot-ſtalks dividing into ſmaller, each ſupporting a ſmall roundiſh ſpike of flowers.

This ſpecies often proves biennial, but by cutting down ſome of the ſtalks before they flower, it will cauſe it to multiply at bottom, and become abiding.

*Shrubby kind for the Green-houſe.*

[3]POTERIUM *Spinoſum.*

*Shrubby Spinous Burnet of Crete.*] Hath a ſhrubby ſtem and branches, riſing a yard high, armed with ſpines; ſmall pinnated evergreen leaves, of ſix or ſeven pair of lobes, terminated by an odd one, and the branches terminated by ſmall heads of greeniſh flowers.

All theſe three ſpecies flower in June and July, ſucceeded by ripe ſeeds in autumn.

They are all naturally perennial, but the two herbaceous kinds being abiding in root only; the other in root, ſtem, and branches; and the two former are hardy, and the third requires ſhelter in winter.

The firſt ſort merits culture in every kitchen-garden for winter and ſpring ſallads.

Some plants, both of the firſt and ſecond ſorts, may be introduced in the herbaceous collection in the pleaſure-garden for variety.

Keep the third ſort always in pots to have ſhelter in winter.

They are all eaſily propagated as follows.

The firſt ſort by ſeed, and by parting the roots.—Sow the ſeed in autumn or ſpring, in a border of light earth, and rake it in, and when the plants are two or three inches high, plant them out in any bed or border a foot aſunder, finally to remain.—Parting or ſlipping the roots is performed alſo in the autumn or ſpring ſeaſon, planting the ſlips as directed for the ſeedlings.

The ſecond ſort may alſo be encreaſed by ſeed and ſlips off the root, as for the former ſort.

And the propagation of the third is by ſlips or cuttings of the branches in ſpring and ſummer, planted in pots, and placed under glaſſes, giving ſhade and water; or might be forwarded more by plunging them in a hot-bed.

POTS. Garden Pots for plants and flowers.

In gardening, Pots are particularly neceſſary in the culture of all tender exotics of the of the green houſe and ſtoves, all of which muſt be planted in Pots for the convenience of moving them in and out of theſe departments as occaſion requires.

Pots are alſo exceedingly uſeful in raiſing many young ſeedlings and cuttings, that may require moving to occaſional ſhade, ſhelter, and artificial heat, likewiſe for many young plants that are tender whilſt young, requiring to be removed under ſhelter for the firſt two or three winters, but become hardy enough afterwards to bear the full air the year round; and Pots are likewiſe very convenient in in which to plant many of the more curious hardy flowering plants and others, and choice flowering ſhrubs, &c. to remove occaſionally to adorn any particular compartments.

There are about eight different ſizes of Garden Pots, which are neceſſary in order to ſuit the different ſorts of plants, as well as all ſorts of plants in their different ſtages of growth; as when the plants are young and of ſmall ſize, they may be firſt planted in ſmall Pots, and as they by degrees increaſe in bulk, ſhift them into pots a ſize larger, repeating it as often as neceſſary. See PLANTING *in* POTS and *Shifting Plants.*

The ſeveral ſizes of Pots are in regular gradation, and at the Pot-houſes each ſize has its name for the convenience of readily ſupplying the ſizes wanted for particular uſes; they being always reckoned by the caſt, from two to ſixty Pots to each, according to their ſizes, the largeſt Pots being only two to a caſt, and the ſmalleſt ſixty; ſo that as there being eight different ſizes or caſts: they are diſtinguiſhed by the following terms, twos, eights, twelves, ſixteens, twenty-fours, thirty-twos, forty-eights, and ſixties; ſo according to the above numbers there are ſo many Pots to each caſt; the ſeveral caſts from the twos,

being

being in a gradual diminution, and the price of the different caſts are the ſame; thoſe of two, &c. being as much as thoſe of ſixty, and ſo of the reſt; from two to three ſhillings is the general price per caſt at the potter's in the neighbourhood of London.

The principal places in the vicinity of London for the red pot houſes, or potters that make Garden Pots, are moſtly in the villages contiguous to the river Thames, for the convenience of water-carriage, ſuch as Lambeth, Rotherhith, Deptford, Greenwich, Hammerſmith, Brentford, Bow, &c.

In chuſing the Pots, ſee that they are burned ſufficiently hard, and ſo perfectly ſound as to ring when ſtruck with your knuckle, and that they have all holes at the bottom to diſcharge the ſuperfluous moiſture from the earth about the roots of the plants; the larger pots having generally four holes, one in the middle of the bottom, and three around the circumference thereof, at equal diſtances; but the ſmaller Pots have commonly only one hole in the middle of the bottom.

With reſpect to the proper ſizes of Pots requiſite for the different ſorts of plants, it is commonly mentioned in their reſpective genera, when any particular ſizes are neceſſary.

When we occaſionally ſpeak of ſmall Pots, it is generally to be underſtood either as ſixties, forty-eights, or thirty-twos, according to the ſorts or ſizes of the plants.

For the method of planting in Pots, &c. ſhifting plants from one Pot to another, &c. See *Planting in Pots*, under the article PLANTING.

And when any plants are become two large for Pots, they are to be ſhifted into tubs, as is often neceſſary for orange and lemon trees, great American aloes and ſome other large-growing exotics. See TUBS.

PRIMULA. Primroſe. Including Polyanthus and Auricula.

This famous genus *Primula* furniſhes a grand collection of low, herbaceous, fibrous-rooted, flowery perennials; two celebrated ſpecies in particular, *common Primroſe* and *Auricula*, have ſingular merit, as very beautiful ſpring flowers, and for each ſpecies furniſhing thouſands of varieties, are all of humble growth, with the roots crowned by a cluſter of oblong broad leaves, and low ſlender flower-ſtalks, from about three or four to to ſix or eight inches high, terminated by monopetalous, five-parted flowers, ſome ſingly, others in cluſters.

Claſs and order, *Pentandria Monogynia*.

*Characters.*] CALIX, a many-leaved involucrum, containing many ſmall flowers, each having a monophyllous, tubulous, pentagonous cup, divided into five acute erect ſegments, and is permanent. COROLLA, is monopetalous, with a long cylindric tube the length of the calix, having the limb or upper part ſpreading, and divided into five roundiſh heart-ſhaped ſegments. STAMINA, five very ſhort filaments, ſituated in the neck of the corolla, having acute erect antheræ. PISTILLUM, a round germen, ſlender ſtyle, and globular ſtigma. PERICARPIUM, an oblong, cylindric, unilocular capſule, ten-parted at top, containing numerous ſmall ſeeds.

There are ſix or ſeven ſpecies of this genus, two of which demand univerſal eſteem as flowery plants; namely, *Common Spring Primroſe*, and *Auricula*; the former of which includes all the family of the Primroſes, Cowſlips, and all the numerous varieties of Polyanthuſes; and the latter, all the vaſt train of the Auricula tribe. The *Auricula*, however, was formerly ranged as a diſtinct genus; but its general characters determining it a ſpecies of *Primula*, modern botaniſts arrange it accordingly.

'PRIMULA *Veris*.

*Spring Primroſe.*—Conſiſting of the three following principal varieties, — Common Primroſe,—Cowſlip Primroſe,—Polyanthus Primroſe; each having many varieties.

*Common Primroſe kinds.*

*Common Spring Primroſe.*] Hath thick very fibrey roots, crowned by a cluſter of large, oblong, indented, rough leaves, and numerous flower-ſtalks, from about three or four to five or ſix inches high, each terminated commonly by only one flower, of different colours and properties in the varieties.

*Varieties of theſe are.*] Common yellow-flowered Primroſe of the woods—White Primroſe — Paper-white Primroſe — Red Primroſe--Double yellow Primroſe—Double white Primroſe — double red Primroſe. — All of which varieties having generally but one flower on each ſtem, but riſe in ſuch plenty from every part as to appear almoſt covered with flowers.

They all flower abundantly in March and beginning of April, continuing a month or ſix weeks.

All theſe varieties of *Common Spring Primroſe*, are hardy perennials: the ſingle yellow ſort grows wild in woods, &c. in moſt parts of England; all the others being ſeminal or ſeedling varieties of it, that have been principally obtained by culture in gardens. The double kinds in particular have ſingular beauty; the flowers being large, and perfectly full and double, and make a fine ſhew, highly meriting culture in the beſt collections of ſpring-flowers.

Theſe varieties in general delight moſtly in ſhady ſituations, whereby all the ſorts, both ſingle and double, are proper ornaments for the borders of ſhrubberies, wilderneſs quarters, and ſhady walks, where they will flower abundantly, and make a fine appearance. Some plants may alſo be diſperſed in other more open compartments for variety.

Prodigious quantities of the ſingle Primroſe plants are brought to London, every ſpring, by the herb-women, which they gather in the neighbouring woods, when in full bloom, taking them with roots, and ſell them about the ſtreets.

The propagation of all theſe varieties is effected abundantly by ſlipping or parting the roots. Numerous ſingle kinds may alſo be raiſed from ſeed, ſowed in a ſhady border in autumn or ſpring, as directed for the Polyanthus; but raiſing ſeedlings is hardly worth practiſing, ſince they encreaſe ſo plentifully by the roots.

Remarking, however, that the propagation by ſlipping or divided the roots is the only method for encreaſing the double kinds; and as theſe ſorts are the moſt beautiful, and multiply in tolerable plenty by off-ſets, it is proper to raiſe a good ſtock of them, which may be effected with great facility every year ſoon after their flowering is paſt, as they will then be increaſed into bunches; therefore being furniſhed with ſome good roots, proceed to their propagation in autumn, about July, Auguſt, or September; taking them up out of the ground, and divide each bunch of plants into ſeveral ſlips, and directly plant them in a ſhady border of good rich earth, ſix or eight inches aſunder, and each ſlip will become a good plant, and will flower ſtrong the following ſpring.

Obſerve, it is proper to remove and part the roots of the double kinds, in particular, every year; but not to omit once in two years at moſt, in order to preſerve the plants in vigour.

### *Cowſlip kinds.*

*Cowſlip-Primroſe, or Cowſlip.*] Hath very thick fibrey roots, crowned by a cluſter of oblong, indented, round leaves, and upright firm flower-ſtalks, five or ſix inches high, terminated each by a cluſter of ſmall yellow flowers, and other different colours and properties in the varieties.

*Varieties of theſe are.*] Common ſingle yellow Cowſlip of the meadows and paſtures —Double yellow Cowſlip—Scarlet Cowſlip —Hoſe-and-hoſe Cowſlip, one flower growing out of the boſom of another, the lowermoſt ſerving as the calix; all of which varieties having the flower-ſtalks crowned by many flowers, in bunches.

They flower in April and May, continuing in ſucceſſion a month or ſix weeks.

All the varieties are hardy perennials, ſome of them inhabitants of meadows and paſture grounds, particularly the common ſingle yellow ſort, in great abundance; which ſort is of excellent uſe in medicine, and a fine cordial wine is made of the flowers. Some plants of all the varieties merit admittance in the pleaſure garden, to increaſe the variety of the ſpring bloom, but principally the double kinds, placing them in the fronts of ſome ſhady moiſt borders, &c. they do not, however, ſucceed ſo well immediately under ſhade of trees, &c. as the common Primroſes.

The propagation of theſe ſorts is principally by parting the roots, as directed above for the common Primroſe: this method of progation is, however, particularly neceſſary for all the double kinds, and having a few roots of each ſort, they will multiply exceedingly by off-ſets, and ſoon encreaſe your ſtock.

### *Polyanthus kinds.*

*Polyanthos Primroſe, commonly called Polyanthus.*] Hath thick fibrated roots, increaſing into large bunches, crowned with a cluſter of large oblong indented rough leaves; amidſt them upright flower-ſtalks ſix or eight inches high, terminated moſtly by a cluſter of ſeveral ſpreading flowers, of many different colours and variegations in the varieties.

*Varieties.*] The varieties of *Polyanthus* are innumerable in the different colours and variegations of the flowers; but the principal colours are—Purple-flowered—Red-flowered Gold-coloured—Orange-coloured, &c. each having numerous intermediate ſhades and variegations, that ſometimes in one bed or

border of ſeedlings we may diſcover many hundred different ſorts, and the varieties may ſtill be increaſed without end from ſeed; and the ſelect varieties of each ſowing may all be continued and increaſed plentifully by ſlipping the roots, which annually multiply into large bunches, and may be parted or ſlipped with the utmoſt facility into many ſeparate plants.

They all flower beautifully in April and May, and often flower again in autumn, and ſometimes in winter, in very mild ſeaſons; but the ſpring is their principal ſeaſon of flowering in the greateſt perfection, and ripen ſeeds abundantly in June or July.

This variety, *Polyanthus Primroſe*, is one of the moſt beautiful of our fibrous-rooted ſpring flowers for the open borders, remarkable for its wonderful ſeminal diverſity, all of which are hardy perennials, that flouriſh in almoſt any common ſoil and ſituation, but delight moſt in a loamy or other rich moiſt ſoil, and in a ſomewhat ſhady border; in a ſhady ſituation, however, they continue conſiderably longer in full bloom than in a ſunny expoſure; for a fierce ſun often greatly affects theſe flowers both in beauty and duration; it is therefore proper to plant a collection of the fineſt ſorts in the ſhade, not immediately under trees, &c. but in ſome eaſtward ſhady border, ſheltered by a wall, hedge, or other fence from the noon-day ſun, planting them at ſix or eight inches diſtance; and here the plants will continue flowering in full beauty a month or ſix weeks, but a quantity of different varieties ſhould alſo be diſperſed in the fronts of the ſeveral borders contiguous to the principal walks, in aſſemblage with other flowers, in which they will effect a very agreeable variety.

The Polyanthus is one of the noted prize-flowers among floriſts; many of whom are remarkably induſtrious in raiſing a conſiderable variety of different ſorts, as well as uſe every art to blow them with every requiſite perfection; for among thoſe vertuoſi, a Polyanthus muſt poſſeſs ſeveral particular properties to have admittance in their choice collections.

But there are numerous varieties of Polyanthus, that, although deſtitute of ſome of the properties required by floriſts, are nevertheleſs very pretty flowers for ornamenting the common borders.

The chief properties however of a floriſt's Polyanthus are principally the following:—

1. The ſtem or flower-ſtalk ſhall be upright, moderately tall, with ſtrength in proportion, and crowned by a good regular bunch of flowers, on ſhort pedicles, ſtrong enough to ſupport them nearly in an upright poſition 2. The florets of each bunch ſhould be equally large, ſpread open flat, with the colours exquiſite, and the ſtripes and variegations lively and regular. 3. The eye in the centre of each floret ſhould be large, regular, and bright; and the antheræ, by the floriſts called the thrum, ſhould riſe high enough to cover the mouth of the tube or hollow part in the middle of the florets, and render them what they call thrum-eyed; but when the ſtyle elevates the ſtigma above the antheræ, the eye of the tube generally appears hollow, ſhewing the ſtigma in the middle, like the head of a pin, is hence called pin-eyed, and is rejected as an incomplete flower, although its other properties be ever ſo perfect.

But although the floriſts reject a pin-eyed Polyanthus, it is the flower in its moſt perfect ſtate; and great numbers of them are of as beautiful forms, colours, and ſtripes as the thrum-eyed varieties, and demand equal attention as furniture for decorating the common flower compartments, &c. or to exhibit a general ſhew in a bed or border.

The method of propagation for the Polyanthus is, by ſeed, and by parting the roots.

By Seed.—This is the only method of propagation to gain new varieties, and to raiſe a large ſtock of plants, as a blow of many new flowers may be annually obtained for the choice collection, and a large ſupply for the common borders: the ſeaſon for ſowing the ſeed is, either in autumn, ſoon after it is ripe, or early in ſpring; in either ſeaſon of ſowing they will ſoon come up, but will not flower till the ſecond ſpring; obſerving, however, that by ſowing early in autumn, the plants generally come up freely the ſame year, be fit to plant out betimes the next ſpring, and become ſtronger plants by the ſpring following, capable of flowering in greater perfection than the ſpring-ſowed ſeedlings: remarking if you ſow in autumn let it be in July or beginning of Auguſt, and if in the ſpring, perform it in February, March, or beginning of April: and the ſowing in both ſeaſons may be performed either in large pots or boxes of rich earth, in order to move to different ſituations occaſionally, or in an eaſt border of light rich ſoil; but ſowing in pots or boxes may

may be the moſt eligible for the autumn ſowing, for the convenience of moving to a little ſhelter in froſty weather; in either method ſow the ſeed on the ſurface moderately thick, covering it evenly with light earth only about a ſtraw's breadth thick, or if ſowed in a border, it may either be raked in very light and evenly, or covered as above; the plants will appear in three or four weeks, obſerving that if ſowed in boxes, &c. they ſhould be removed to a ſhady border during the warm weather, and thoſe of the autumn ſowing to a warm ſituation in winter, allowing them alſo ſome protection from froſt.

In the ſpring, or beginning of ſummer, when the plants of either ſowing are one or two inches high, they ſhould be planted out in ſomewhat ſhady borders, as formerly mentioned, about five or ſix inches aſunder, to remain for flowering; which they will all effect the following ſpring, when thoſe of good properties ſhould be marked, and the others may be tranſplanted into the common flower-borders.

Obſerve, that although all the ſelect varieties may be multiplied plentifully by dividing the roots as directed below; yet it is neceſſary to raiſe a quantity of ſeedlings every two or three years, both to obtain new varieties, and to keep up a ſtock of young plants to ſucceed the old ones, which after the third year's bloom rarely flower ſo ſtrong and fair as the one or two years old ſeedlings.

It is proper likewiſe to continue increaſing the more excellent ſorts, by parting the roots.

By Parting the Roots.—By this method all the ſorts may be propagated in great abundance every year, for the roots multiply exceedingly by off-ſets into large bunches, ſo as to admit of ſlipping or parting annually in autumn; and every ſlip furniſhed with ſome fibres will readily grow, become a good plant, and flower the following ſpring; ſo that in the propagation by parting the roots any particular approved ſorts may be multiplied every year at pleaſure.

The proper time of year for this work is, any time in ſummer and beginning of autumn, after the plants have done flowering; but if performed in July or Auguſt, the ſlips will have good time to get ſtrength before winter, ſo as to flower ſtrong next ſpring.

At the proper time therefore take up the plants out of the ground, and divide each bunch into ſeveral ſlips, not too ſmall, unleſs where as great an increaſe as poſſible is wanted, being careful to preſerve ſome root to each ſlip, they are then to be planted in a freſh dug border, enriched with dung, ſetting them five or ſix inches aſunder, give water directly, and repeat it occaſionally till they have taken good root.

When a large quantity of theſe plants are required for ſale, or for the ſupply of markets, either the roots to plant, or the flowers for noſegays, a quantity ſhould be raiſed every year, both from ſeed and by ſlips as before obſerved, and planted out early in autumn, in beds or borders ſix inches aſunder; and after having one year's growth, they will be of a proper ſize for ſale.

Great quantities of the common ſorts are brought annually to Covent-garden and Newgate Markets every ſpring when in bloom for ſale, when they ſell for about a ſhilling per dozen of roots; though the fine ſorts are rarely brought to market, and they fetch a much greater price.

*Auricula Kinds.*

[2]PRIMULA *Auricula.*

*Auricula Urſi*, or *Bear's-ear*; *but commonly called Auricula.*] Hath a thick fibrated root, crowned by a cluſter of oblong, broad, fleſhy, ſerrated, ſmooth leaves, reſembling the ſhape of a bear's ear, and amidſt them upright flower-ſtalks from about three or four to ſix or eight inches high, terminated by an umbellate cluſter of beautiful flowers, of many different colours and variegations in the varieties.

It is a native of the Alps, but has been a long reſident of our gardens.

*Varieties of this.*] The varieties of this are amazingly numerous both in the diverſity of the leaves and flowers, ſuch as oblong-leaved—roundiſh-leaved—broad-leaved——narrow leaved——green-leaved——white or mealy-leaved, being covered with a fine mealy duſt or farina. And of flowers there are, purple-flowered, numerous ſorts of lighter or darker ſhades, ſtripes and variegations—red-flowered, numerous varieties of lighter or darker reds, ſtriped and variegated ſorts—yellow-flowered, ſeveral varieties, as bright yellows, buff-coloured, dun-coloured——double purple flowered, double yellow-flowered, variegated purples, and innumerable other moſt beautiful varieties. All the varieties, both ſelf coloured and variegated ſorts, have a circular eye in the middle of each flower, and

and of which there are, yellow eyed—white-eyed—and the petals of moſt of the ſorts are powdered with a moſt delicate farina, or mealy powder, which contributes exceedingly to the beauty of the flowers.

Of the above principal varieties there are innumerable diverſities, and many new ones annually acquired, which being all firſt obtained from ſeeds, though as the ſeedlings vary ſo greatly, it is probable that not one in a hundred may prove a real good flower; but when once any excellent new varieties are gained, they may be increaſed annually by off-ſets, to a large ſtock, and continued for ages; and the fine ſorts, according as they are obtained, are all named by the floriſts, ſometimes by that of the perſon who firſt raiſed them, but more frequently that of ſome illuſtrious perſonage, which they number and book accordingly.

They all flower in April and May, continuing a month or ſix weeks in beauty, and ripen plenty of ſeeds in June.

All the varieties are hardy, herbaceous, ever-green perennials, that proſper in any common ſoil of a garden not too wet in winter; for being ſomewhat ſucculent, a very humid ſoil in that ſeaſon is apt to rot them: allowing them however any moderately dry ſoil, they will ſtand all weathers the year round.

Conſidered as flowery plants, they claim precedence of moſt other ſpring flowers, for their admirable beauty and wonderful variety; and among floriſts are eſteemed the moſt beautiful of their prize and ſtage flowers, the fine ſorts being planted in pots, in order for placing them upon elevated covered ſtages or ſtands, during their bloom, both to ſhew the flowers to greater advantage, and to defend them from the full ſun and ſhowers of rain, which would impair their beauty, and haſten their decay: a ſhare of the common ſorts ſhould alſo be diſpoſed in the open borders in aſſemblage, or you may likewiſe plant a collection together in ſome bed or border to ſhew a general bloom; for they will proſper in any open ground, not under ſhade and drip of trees, &c. and are rarely injured by the moſt inclement weather.

But a quantity of the principal varieties with requiſite properties ſhould always be kept in pots, in order for moving to different ſituations for the advantage of blowing the flowers in the greateſt perfection.

The principal properties neceſſary to conſtitute a good Auricula are, the flower-ſtem ſhould be upright, tall, and ſtrong enough to ſupport its cluſter of flowers tolerably upright; the cluſter or truſs of flowers ſhould be large and regular, ſomewhat of a roundiſh form, all the florets of the bunch being ſuſtained on ſhort pedicles, in order to ſupport the whole in a proper poſition, to form the truſs cloſe and regular; the florets ſhould be large and the top ſpreading flat and regularly around, and the eye of each floret large, circular, and bright.

Flowers having nearly the above properties, being of fine colours, particularly the moſt beautiful variegated kinds, are proper ſorts to plant in pots (twenty-fours or thirty-twos) for ſtage flowers; ſo that when you raiſe ſeedlings, &c. you ſhould previouſly ſee them blow, to diſcover their properties before you pot them, which may be done early in autumn, when the flowering is paſt, planting one plant in each pot, and place them in the ſhade all ſummer, and in a warm ſituation in winter, and in ſpring, according as the flowers open, place them on ſome covered ſtage as before obſerved.

But in the culture of the fine varieties of Auriculas, the floriſts generally prepare a particular compoſt earth; the principal one is, light earth from ſome paſture ground, the top ſpit with the ſward, or any other good light mould, and neats dung or good rotten hot-bed dung, having of the earth and dung an equal portion of each, and about half the quantity of drift or ſea ſand; and ſometimes where rotten wood becomes earthy, ſuch as willow earth, old rotten tan, ſaw-duſt, &c. can be obtained, a portion is alſo added, mixing and forming the whole into an heap, to remain about a year, turning it over ſeveral times, and it will be of a proper temperature for uſe. See COMPOSTS.

In default however of the above mixtures, you may take any good light earth of a garden, blended with an equal portion of perfectly rotten dung, and a little drift ſand if poſſible.

*Their Propagation and general Culture.*

The method of propagating all theſe plants is by ſeed, to gain new varieties, and by ſlipping the roots to multiply the approved kinds.

By Seed.—By raiſing ſeedling plants we are ſure to gain ſome new varieties, and being raiſed one year, they begin to flower the next, though

though it is probable, that out of hundreds, there may be but very few real fine flowers; but when once any new excellent ſorts are ſo obtained, they multiply annually by off-ſets to increaſe the ſtock.

The ſeed generally ripens in June, and ſhould be ſowed in July or Auguſt, not later however than September; or it may be done in ſpring; but by ſowing early in autumn you gain time.

For this purpoſe get ſome large pots or boxes filled with light rich compoſt, ſow the ſeed on the ſurface, and cover it ſcarcely a ſtraw's breadth deep, and directly place the pots or boxes where they may have only the morning ſun during the hot weather, giving them moderate waterings, and if ſowed early in autumn, the ſeedlings will probably riſe in tolerable plenty the ſame year; in October, however, remove the pots, &c. to a warm ſunny ſituation for the winter, or may be placed in a garden-frame to have ſhelter from froſt, and exceſſive wet or ſnow; but let them enjoy the free air in all moderate weather; early in March replace them again in the ſhade to have only the morning ſun, for the quite young ſeedlings of theſe plants are unable to bear the ſun fully; therefore continue them in this ſituation all ſpring and ſummer, ſupplying them with water in dry weather; and in July following take opportunity of moiſt weather, and prick them out in nurſery-beds, or in large pots or boxes, filled with good compoſt; in either of which prick the ſeedlings pretty cloſe, *i. e.* two or three inches aſunder, giving water and occaſional ſhade from the ſun till freſh rooted, or if in pots or boxes, remove them to a ſhady ſituation: in theſe beds or pots, &c. they are to remain till they flower, which will be ſpring following, when all the good ſorts ſhould be marked, or may be directly tranſplanted into ſeparate ſmall pots (twenty-fours) one plant in each; and next year they will all blow in perfection, and diſcover their properties more perfectly, then may be ſhifted into larger pots (thirty-twos); obſerving to manage them as hereafter directed.

The ordinary ſorts will do to plant in the common borders, to form variety amongſt other low ſpring flowers.

By Off-ſets, or dividing the Roots.—By this method all the ſelect varieties are propagated, for the roots throw out off-ſets in tolerable plenty, each of which being ſlipped off and planted, will next ſpring produce flowers exactly like the parent plant, and theſe in their turn produce off-ſets for further propagation, which will produce alſo the ſame ſort of flowers, &c. and thus may the choice varieties be annually increaſed, and continued for years.

The ſeaſon for performing this work is, occaſionally both in ſpring and autumn; if only to ſlip off any outſide off-ſets that appear, it may be done in ſpring, either before or at the time of flowering, though towards autumn, about July or Auguſt, when the flowering ſeaſon is paſt, and the plants having had the ſpring and ſummer's growth to furniſh ſtrong off-ſets, will be the moſt eligible ſeaſon for any general propagation by ſlips: the roots may be then either taken up and divided into ſeveral ſlips, where a conſiderable increaſe is required, or the roots may ſtand, and only detach any outſide off-ſets, as aforeſaid; and in either ſeaſon or method of ſlipping or dividing the plants, proceed to pot the off-ſets or ſlips of the choice ſorts ſeparately, but the common kinds may be planted in beds of rich earth.

Having however ſlipped or divided the off-ſets of the fine varieties, then being furniſhed with a quantity of ſmall pots, twenty-fours or thirty-twos, according to the ſize of the ſlips, filling them with the proper compoſt, plant one off-ſet in each pot; give ſome water to ſettle the earth, and promote their ſtriking; and then place them under ſome ſhady fence, upon level clean ground, to have only the morning ſun all ſummer, repeating the waterings in dry weather two or three times a week; and at the approach of winter place them under ſome warm wall open to the ſun, to remain until ſpring, and begin to ſhew their flowers, when the choice ſorts ſhould be placed on the Auricula ſtage, in order to protect the bloom from the weather, and preſerve them as long as poſſible in beauty.

*General Management.*

In the culture of the fine Auriculas in pots, it is proper, as before hinted, to have ſome ſort of covered ſtage, having the front open to the morning ſun only, on which to arrange the pots of plants when in bloom, to ſhew the flowers to good advantage, and protect them from rain and too much ſun: the ſtage ſhould have ſeveral ranges of narrow ſhelves, one above another, on which to ſet the pots; ſome ſtages are ſo conſtructed as to turn round any way at pleaſure, more or leſs to the ſun; and

ſome

ſome are formed circular, having the ſhelves arranging in a pyramidal manner, and ſome have canvas curtains to draw or let down occaſionally, either to break off driving rains, or afford ſhade from the ſun.

On theſe ſtages the pots of plants ſhould be placed in the ſpring, according as the flowers of each plant begins to open, and not before, to remain during the continuance of the beauty of the flowers; obſerving to ſupply them with water about three times a week, or every other morning, giving it only to the earth in the pots, at leaſt let none fall on the flowers, for wet would greatly deface the bloom.

When the full blow is paſt, remove the pots directly into the full air in a ſhady border to receive the full benefit of the free air and rains, to encourage their off-ſets and the ripening of ſeeds.

During the ſummer ſeaſon they ſhould remain conſtantly in the ſhade, but not under drip of trees, and muſt have proper waterings in dry weather.

In July or Auguſt the plants ſhould be freſh potted into new compoſt, but more eſpecially ſuch plants as have thrown out ſome good off-ſets, ſhould have them ſeparated and potted as already directed; though ſmall plants that have made no progreſs in off-ſets, may remain unremoved another year; obſerving, however, that July or the beginning of Auguſt is the beſt time for freſh potting them, ſtill continuing them in the ſhade during the hot weather, and ſupply them with water.

At the approach of winter remove the pots under ſome warm ſituation open to the ſun, to remain till ſpring, or may be placed under ſome hoop-arches, or in a garden frame, and there occaſionally ſheltered from ſevere froſt, great rains, and ſnow, to preſerve them in greater vigour, but muſt conſtantly enjoy the full air in all mild weather; in default, however, of ſuch ſhelters, arrange the pots cloſe along under a warm wall, for the plants are very hardy, only obſerving, that when very wet or ſnowy weather begins, lay the pots down on one ſide with the plants towards the ſun, to prevent their receiving too much moiſture, which would rot theſe kind of plants; but as the ſpring advances, place them upright again, that the flower-bud may take its proper upright direction.

In ſpring, about the beginning or middle of February, it is proper to mould up the pots with ſome freſh compoſt; firſt take out ſome of the old mould at a convenient depth without diſturbing the roots and clear the plants from any decayed leaves, then immediately fill up the pots with new earth: this will prove a very beneficial dreſſing both in ſtrengthening the bloom and encouraging the growth of off ſets.

When the plants begin to ſhew their flower-buds, occaſional ſhelter, if ſharp froſts happen, will be of great ſervice in preſerving them from being blighted, which often prevents their blooming fair, and ſometimes intirely deſtroys the flower; it is therefore adviſable to uſe a ſlight covering of mats every froſty or very cold night about the firſt ſhooting of the buds.

And according as the flowers open fairly remove the pots on the ſtage, &c. to remain to blow as already directed.

The further management of the potted plants after flowering is the ſame as before, and which is to be repeated every year.

[3]PRIMULA *Farinoſa.*

*Farinoſous Primula, commonly called Bird's-eye.*] Hath a fibrous root, with a ſmall ſcaly head, crowned by ſeveral long, ſmooth, crenated leaves, mealy underneath, and upright flower ſtalks half a foot high, terminated by a cluſter of ſmall red flowers, having yellow eyes in the center.

It grows naturally in the North, but is cultivated in many gardens as a flowing plant; produces its flowers in the ſpring.

Plant it in any common border, it will flower annually and multiply plentifully by off-ſets.

PRINOS Winterberry.

Two ſhrubby ſpecies compoſe this genus, one is deciduous the others an ever-green, both hardy ſhrubs for the ſhrubbery, &c. obtain eight or ten feet ſtature, garniſhed with oblong leaves, and menopetalous wheel-ſhaped flowers.

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX, is monophyllous, ſix parted and permanent. COROLLA, is one wheel-ſhaped petal cut into ſix oval ſegments. STAMINA, ſix awl ſhaped ſhort filaments and oblong obtuſe antheræ. PISTILLUM, an oval germen terminating in a ſhort ſtyle, and obtuſe ſtigma. PERICARPIUM, a roundiſh ſex-locular berry, having ſix hard ſeeds.

The ſpecies are,

[1]*Prinos Verticillatus,* (deciduous)

*Virginia deciduous Winterberry.*] Grows ſix or eight feet high, very branchy from bottom to top; large ſpear-ſhaped longitudinally-ſawed leaves placed alternately, and ſmall flowers from the ſides of the branches, ſome ſingly, others two or three together, ſucceeded by purple berries remaining all winter.

2 PINOS *Glaber* (ever-green.)

*Smooth Ever-green Canada, Winterberry, Yappon, or South-Sea Thea Shrub.*] Grows eight or ten feet high, branchy quite from the bottom, oblong ſpear-ſhaped leaves ſerrated at the top, placed alternately, and at the axillas ſmall flowers two or three together, ſucceeded by purpliſh berries continuing all the winter.

Both theſe ſhrubs are of America, are tolerably hardy, eſpecially the deciduous kind, and have been long in our gardens as ornamental ſhrubs to encreaſe the collection in the ſhrubbery, &c.

But the ever-green kind being of a more tender nature, it is alſo kept in pots in order to be wintered in a green-houſe.

They are propagated moſtly by ſeed ſowed ſoon after they are ripe or early in ſpring, in a bed of light earth, covering them full half an inch deep, ſome of which will probably come up the firſt ſpring, but if not ſowed till the ſpring they often remain in the ground till the ſpring following, unleſs forwarded in a hot-bed: when the plants are one or two years old they ſhould be planted out in nurſery rows; it will alſo be proper to plant ſome of the ever-green kind in pots to have occaſional ſhelter the firſt two or three winters as being rather ſomewhat tender whilſt young; but when they have gathered ſtrength turn ſome of them out into the full ground, and retain ſome in pots as green-houſe plants.

## PRUNING.

Pruning is an operation of the knife performed upon trees occaſionally, in order both to give them any deſired form, and to retrench or reduce irregular and redundant or ſuperfluous growths, or whatever creates confuſion and diſorder.

But this operation is particularly neceſſary to be practiſed on many ſorts of fruit-trees, more eſpecially the dwarf ſorts, ſuch as all kinds of wall and eſpalier fruit-trees; it is alſo neceſſary to be performed occaſionally upon ſtandard trees, both dwarfs and half and full ſtandards, to all of which proper Pruning is neceſſary; ſome ſorts annually, as all kinds of wall trees, eſpaliers, and moſt other dwarf or trained fruit-trees; which being requiſite in order to preſerve the proper figure, and to keep them within their limited bounds, as well as to promote fruitfulneſs; but as to common ſtandards whoſe heads having full ſcope of growth every way, they require but very little Pruning, except juſt to retrench any occaſional redundancy, ill-growing branch, and dead wood. Wall trees and eſpaliers however, require a general regulation of Pruning twice every year, in ſummer to retrench the evidently ſuperfluous and ill-placed ſhoots of the year, and to train in a ſupply of the moſt regular ones; and in winter to give a general regulation both to the ſupply of young wood left in ſummer and to the old branches where neceſſary.

For in Pruning wall trees and eſpaliers it is to be obſerved, that as theſe trees having their branches arranged with great regularity to the right and left one above another parallelly, about five or ſix inches aſunder, forming a regular ſpread, ſo as the branches of each tree completely covers a certain ſpace of walling, &c. and as the whole ſpread of branches conſtantly ſend forth every year a great number of unneceſſary and uſeleſs ſhoots; and that as each tree being limited to a certain ſpace, as juſt obſerved, an annual pruning is conſequently moſt neceſſary to retrench the redundancies, and all irregular and bad ſhoots to give the proper bearing branches due room, as well as to enable us to confine each tree within its allotted limits, conſiſtent with its regular form.

The firſt Pruning neceſſary for fruit-trees, is when we attempt to give the head its firſt regular formation, effected by Pruning ſhort or heading down in ſpring all the ſhoots produced the firſt year from budding and grafting, that is, the firſt ſhoots from the budding, &c. when a year old being generally pruned down in March, within four or five eyes of the bottom, whereby it throws all the ſap into the remaining lower buds, and thus, inſtead of running up to one ſtem, it puſhes forth ſeveral ſtrong ſhoots from the lower part the enſuing ſummer ſo as to fill the allotted ſpace of wal ing and eſpalier regularly quite from the bottom; which ſhoots being trained ſtrait and regular in a ſpreading manner, each at full length all ſummer; and in winter or ſpring following, if a ſupply of more principal ſhoots ſhall ſeem neceſſary to form the head more effectually

tually, prune ſhort alſo theſe ſhoots each to four or five eyes, and each of them will throw out the like number of ſhoots the ſame year, which, according as they advance in length, train at regular diſtances at full length during the ſummer as before obſerved, for the ſhoots of wall trees ſhould never be ſhortened in the ſummer ſeaſon, for this would cauſe them to puſh forth many trifling lateral ſhoots; though ſometimes, in order to fill a vacancy as ſoon as poſſible, ſtrong young ſhoots being pinched early in the ſeaſon, as in May or beginning of June, to four or five eyes, will throw out ſeveral proper ſhoots the ſame ſummer, repeating however the work of Pruning ſhort occaſionally one or two years, &c. as above, either in general or to particular ſhoots as it may ſeem proper till a proper ſet of branches are by that means obtained to give the head of the tree a proper formation; afterwards Pruning ſhort is to be omitted except occaſionally to any particular ſhoot to fill a vacant ſpace: but ſome ſorts of wall trees require almoſt a general ſhortening of their ſupply of ſhoots, ſuch as peach, nectarines, &c. which bear only on the young wood; have that of each year ſhortened, to force out a ſupply of ſhoots for future bearing: other ſorts of wall-trees and eſpaliers are not in the general courſe of pruning to be ſhortened, ſuch as pears, apples, plums, and cherries, which bear in the old wood from two or three to many years growth. See DWARF TREES and ESPALIERS.

After the trees are thus furniſhed with a proper ſpread of branches trained regularly to the wall and eſpalier, they will every year throw out many more ſhoots than are wanted, or can be converted to uſe, by being ſome too numerous, others ill placed, aud others of a bad growth, all of which muſt therefore be regulated accordingly by proper pruning, for as the regular figure of the tree, well furniſhed in every part equally from the bottom to the top of the wall or eſpalier with proper branches, capable of producing a reaſonable quantity of good fruit, are the principal objects of Pruning, all our operations muſt be directed to theſe ends.

We muſt therefore be careful to eaſe the trees of every thing that is either ſuperfluous, irregular, or hurtful, by Pruning twice every year, a ſummer and a winter Pruning. We call that ſuperfluous which though good and well placed, yet are more than are wanted or can be properly laid in, and that irregular which is ſo ill placed as it cannot be trained with regularity to the wall or eſpalier, ſuch as all fore-right ſhoots, being ſuch as grow immediately from the front or back of the branches in a fore-right direction, which though good of themſelves, yet their ſituation renders them irregular or unfit for training; and we call that hurtful which is in itſelf of bad growth, ſuch as all very rank or ſingularly luxuriant rude ſhoots; ſo that the ſuperfluous or redundant growths ſhould be thinned by Pruning out all that ſeem to cauſe confuſion, and the irregular and hurtful rank ſhoots ſhould be diſplaced, cutting every thing of all theſe ſorts off quite cloſe to the place from whence they proceed, leaving however a proper ſupply, more or leſs, of the regular or beſt placed ſide-ſhoots where neceſſary, ſo as to preſerve every part well furniſhed with bearing wood, trained ſtraight and cloſe to the wall or eſpalier at equal diſtances; obſerving ſome ſort of wall-trees, &c. require a general annual ſupply of young wood, ſuch as peach and all other trees which bear only on the ſhoots of a year old; others require only an occaſional ſupply of wood, ſuch as apples, pears, &c. and all other kinds that bear on the old wood of from two or three to ten or twenty years old or more, ſo that the ſame branches continuing in bearing many years, the trees require only a ſupply of young ſhoots now and then to replace any worn out and dead branches. See *Summer* and *Winter Pruning*.

For the myſtery of Pruning conſiſts in being well acquainted with the nature of bearing of the different ſorts of trees, and forming an early judgment of the future event of ſhoots and branches, and many other circumſtances, for which ſome principal rules may be given; but there are particular inſtances which cannot be judged of but upon the ſpot, and depends chiefly upon practice and obſervation.

The nature or mode of bearing of the different ſorts of wall and eſpalier trees, &c. is materially to be conſidered in Pruning.

For example, peaches, nectarines, apricots, &c. all produce their fruit principally upon the young wood of a year old, that is, the ſhoots produced this year bear the fruit the year following, and the ſame of every year's ſhoots, ſo that conſequently, in all theſe trees, a general ſupply of the beſt regular ſhoots of each year muſt be every where preſerved at regular diſtances quite from the very bottom to the extremity of the tree on every ſide in ſuch order as to ſeem coming

up regularly one after another, which being trained principally all at full length all ſummer: but in winter Pruning, a general ſhortening leſs or more, according to the ſtrength of the different ſhoots, is neceſſary in order to prombte their throwing out more effectually a ſupply of young wood the enſuing ſummer, in proper places for training in for next year's bearing, the fruit being generally produced all along their ſides immediately from the eyes, they rarely forming any conſiderable fruit-ſpurs, as in the apple, pear, &c. but the ſame ſhoots both produce the fruit and a ſupply of ſhoots at the ſame time for the ſucceeding year's bearing.

Vines alſo produce their fruit always upon the young wood, ſhoots of the ſame year ariſing from the eyes of the laſt year's wood only, and muſt therefore have a general ſupply of the beſt regular ſhoots of each year, trained in, which in winter Pruning muſt be ſhortened to a few eyes in order to force out ſhoots from their lower parts only, properly ſituated to lay in for bearing the following year.

Figs bear alſo only upon the young wood of a year old, and a general ſupply of it is therefore neceſſary every year; but theſe ſhoots muſt at no time be ſhortened, unleſs the ends are dead, becauſe they always bear principally towards the extreme part of the ſhoots, which if ſhortened would take the bearing or fruitful parts away: beſides, theſe trees for the general part naturally throw out a ſufficient ſupply of ſhoots every year for future bearing without the precaution of ſhortening.

And as to apple, pear, plum, and cherry trees, they generally bear principally on ſpurs ariſing in the wood of from two or three to ten or twenty years old, the ſame branches and ſpurs continuing bearing a great number of years, ſo that having once procured a proper ſet of branches, in the manner already directed, to form a ſpreading head, no farther ſupply of wood is wanted than only ſome occaſional ſhoots now and then to ſupply the place of any worn-out or dead branch as before hinted; the abovementioned ſpurs or fruit-buds are ſhort robuſt ſhoots, of from about half an inch to one or two inches long, ariſing naturally in theſe trees, firſt towards the extreme parts of the branches of two or three years old, and as the branch encreaſes in length the number of fruit-buds encreaſe likewiſe accordingly; this therefore determines, that in the general courſe of Pruning all theſe kind of trees, their branches that are trained in for bearing muſt not be pruned or ſhortened but trained at full length; for if they were ſhortened it would diveſt them of the very parts where fruit-buds would have firſt appeared, and inſtead thereof, would throw out a number of ſtrong unneceſſary wood-ſhoots, from all the remaining eyes; therefore let all the ſhoots or branches of theſe trees be trained principally at full length, and as they advance ſtill continue them entire, thus they will all readily form the afore mentioned little ſpurs or fruit-buds from almoſt every eye; when indeed there is a vacancy, and there is only one ſhoot, where two or three may be requiſite, in which caſe only pruning or ſhortening is allowable in theſe trees, to force out the ſupply required. See the different ſorts under their proper *genera*, alſo the article DWARF-TREES.

In theſe trees great care is neceſſary to preſerve all the proper fruit-buds or ſpurs, which are readily diſtinguiſhed by their ſhort, thick, robuſt growth rarely exceeding one or two inches long.

In the general courſe of Pruning all ſorts of wall and eſpalier trees, that when diſplacing the ſuperfluous and ill placed woods, &c. always take them off quite cloſe both in the ſummer and winter Pruning, not leaving any ſpurs or ſtumps of them an inch or two long, as often done, which fills the tree full of diſagreeable ſtumps, and which puſhing out ſtrongly from every eye, crowds the tree with a multitude of unneceſſary and irregular ſhoots, and cauſes great confuſion and obſcurity, and exhauſts the ſap to no purpoſe, as well as occaſions a great deal of labour to retrench them; remember therefore, that all ſhoots and branches neceſſary to be retrenched muſt be taken off quite cloſe to the place from whence they ariſe; which in the ſummer Pruning if attended to early, while the ſhoots are quite young and tender, they may readily be rubbed off quite cloſe with the thumb; but when the ſhoots become older and woody, as they will not readily break, it muſt be done with a knife, cutting them as cloſe as poſſible, and all winter Pruning muſt always be performed with a knife.

It ſhould alſo generally be obſerved in Pruning in ſummer, that all the neceſſary ſupply of regular ſhoots that are left for training in ſhould never be ſhortened during

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ing this ſeaſon, unleſs to particular ſhoots to fill a vacancy for by a general ſhortening in this ſeaſon, all the ſhoots ſo treated would ſoon puſh again vigouroufly from every eye, and run your trees into a perfect thicket of uſeleſs wood; therefore all ſorts whether they require ſhortening in the winter Pruning or not, ſhould, in the ſummer dreſſing, be layed in at full length.

Two ſeaſons of pruning are requiſite for all ſorts of wall and eſpalier trees, a ſummer and a winter Pruning.

Summer Pruning.—The ſummer Pruning is a moſt neceſſary operation; every one muſt know that in ſpring and ſummer wall and eſpalier trees abound with a great number of young ſhoots that require thinning and other reforms to preſerve the beauty of the trees and encourage the fruit, and the ſooner it is performed the better; it is therefore adviſable to begin this work in May or early in June, and timely diſburthen the trees of all evidently redundant or ſuperfluous growth and ill placed and bad ſhoots, which may be performed with conſiderably more expedition and exactneſs than when after the trees have ſhot a conſiderable length and run into confuſion and diſorder by their ſhoots forming a thicket, when it will in a manner be impoſſible to ſee what you are about; beſides the diſadvantage of choaking up the fruit behind ſuch a thicket of wood and leaves: it is therefore of great importance to perform this operation in the month of May or early in June, or when the ſame year's ſhoots are ſufficiently formed to enable you to make a proper choice, and tender enough as to require no other inſtrument than the thumb to diſplace the bad growths and ſuperfluities.

However, at any rate, let the work of ſummer Pruning be began before the trees have ſo far advanced in ſhooting as to cauſe much confuſion, which would coſt you a great deal of pains, precaution, and perplexity, to penetrate and break through the obſcurity to determine what is proper to retrench or what to leave.

In this Pruning, we obſerved above, that a great many more ſhoots ariſe from all the principal branches than are wanted, or that can poſſibly be trained with regularity, or that are well placed or proper for the purpoſe; our buſineſs therefore now is to thin and regulate them, by pruning away the ſuperfluous ſhoots, and all ſuch as are ill placed and of bad growth as aforeſaid: as to ſuperfluous ſhoots they are to be conſidered as ſuch when any tree throws out a redundancy of wood, or much more than what is wanted, or that can be trained in; of theſe you muſt now retrench the moſt irregular placed, weakeſt, and all ſuch as are evidently not wanted for uſe, and where two or more ſhoots any where ariſe from the ſame eye, clear all away but one of the beſt, reſerving a ſufficiency of the moderately ſtrong and moſt regular placed ſide ſhoots, and always a leading one at the end of every branch, all of which to be trained in to chuſe from in the winter Pruning, leaving more or leſs in proportion, according to what the trees are, or the mode of bearing as before hinted; though in all thoſe trees that bear always on the young wood leave rather more ſhoots at preſent than what may appear juſt neceſſary, eſpecially of peaches, nectarines, apricots, vines, figs, &c. for it is highly requiſite to reſerve regular wood enough in the ſummer to chuſe out of in winter Pruning to lay in for next year's bearing; but as to apples, pears, plums, cherries, &c. which continue bearing many years on the ſame branches, ſhould leave only here and there ſome good ſhoots towards the lower parts or in any vacancy till winter, and if then not wanted they are eaſily retrenched. Ill placed ſhoots being ſuch as either grow directly from the front or back of the branches ſtraight fore-right, (called fore-right ſhoots,) or any other ways ſo ill placed as not to admit of training with regularity, ſo muſt all be cut out quite cloſe; and bad or hurtful growth being conſidered as any very luxuriant ſhoots, diſtinguiſhed from the others by their rank, vigorous ſhooting, and are like to prove injurious by drawing all the nouriſhment, and impoveriſhing the neighbouring ones that are of more moderate growth, ſhould generally be removed, except where any may ſeem proper to leave to fill a vacant ſpace, in which it may be pinched early to three or four eyes, when it will furniſh you with the like number of more moderate ſhoots to fill the vacancy.

Where however a tree is in general inclined to luxuriancy, it is proper to retain as many of the regular ſhoots as can be commodiouſly trained in with any regularity, in order to divide and exhauſt the too abundant ſap which cauſes the luxuriancy; for by humouring ſomewhat the natural inclination of

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luxuriant trees by leaving plenty of branches and theſe moſtly at full length, is the only method by which we can the moſt readily reduce them to a more moderate ſtate of growth.

Pay particular attention always to the lower parts of your trees, for frequently we ſhall find proper ſhoots ariſing in places neceſſary to be trained in, either to ſupply a preſent or an apparent future vacancy, or as a reſerve to replace any decayed or worn out or other bad branch, ſo that if moderately ſtrong well placed ſhoots arife in ſuch parts, they are particularly to be regarded at this time; and in winter Pruning ſuch of them as are not wanted may be eaſily cut out.

All weak trifling ſhoots ſhould now alſo be taken out, unleſs any ſhall appear uſeful to fill a vacancy, or likely to be of ſervice hereafter.

Obſerve in this Pruning not to diſturb the natural fruit-buds or ſpurs, before deſcribed.

After having ſummer Pruned and cleared any tree from all uſeleſs ſhoots as above, let all the remaining proper ſhoots be directly, or as ſoon as they are long enough, trained in ſtraight and cloſe to the wall or eſpaliers and all of them at full length during the ſummer ſeaſon, for the reaſons before given; not ſhortening any at this time except as before obſerved, when there is any great vacancy, when pinching to three or four eyes may be proper; but let all the reſt be trained at full length till winter Pruning, when they muſt undergo another regulation and ſhorten thoſe of ſuch trees as require it, as peach, nectarine, &c.

The work of training in the ſhoots in this ſeaſon is, if againſt walls, both by nailing by means of proper ſhred and nails, and occaſionally by faſtening in the ſmaller ſhoots, with little ſticks or twigs ſtuck between the main branches and the wall; and for eſpaliers tie them with ſmall oziers, ruſhes, or baſs ſtrings.

Having thus ſummer dreſſed and trained your trees, it will be neceſſary to review them occaſionally, in order to reform ſuch branches or ſhoots as may have ſtarted from their places or taken a wrong direction, alſo that according as any freſh irregular ſhoots produced ſince the general dreſſing may be diſplaced; and likewiſe as the already trained ſhoots advance in length or project from the wall or eſpalier, they ſhould be trained in cloſe, ſtill continuing them at full length during their ſummer's growth, for every thing ſhould be kept cloſe and regular all ſummer, whereby your trees will appear beautiful to the eye, and the fruit will ſhew itſelf and attain its due perfection.

For by thus properly ſummer Pruning and training wall and eſpalier trees early in the ſummer, you preſerve their regularity and proſperity, and by clearing out all the unneceſſary and uſeleſs growths, training the reſt cloſe and regular, the fruit will receive all requiſite advantage from the ſun, air, rains, &c. and it will of courſe attain the greater perfection both in ſize, beauty, and flavour.

Winter Pruning.—In the winter Pruning a general regulation muſt be obſerved both of the mother branches and the ſupply of young wood laid in the preceding ſummer, and the proper time for this work is any time in open weather from the fall of the leaf in November until March.

In performing this work of winter Pruning, it is proper to unnail or looſen great part of the branches, particularly of peaches, nectarines, apricots, vines, and ſuch other trees, as require an annual ſupply of young wood.

Firſt look over all the principal or mother branches, and examine if any are worn out or not furniſhed with parts proper for bearing fruit, according to the rules before illuſtrated with reſpect to the nature of bearing of the different ſorts of trees; and let ſuch branches be cut down to the great branch from which they proceed, or to any lower ſhoot or good branch they may ſupport toward their bottom part, leaving theſe to ſupply its place; likewiſe examine if any branches are become too long for the allotted ſpace either at ſides or top, and let them be reformed accordingly by ſhortening them down to ſome lower ſhoot or branch properly ſituated to ſupply the place, being careful that every branch terminates in a young ſhoot of ſome ſort for a leader, and not ſtumped off at the extremity, as is too often practiſed by unſkilful pruners.

From the principal or larger branches paſs to the ſhoots of the year, which were trained up in ſummer, firſt cutting out cloſe all foreright and other irregular ſhoots that may have been omitted in the ſummer Pruning; likewiſe all very weak ſhoots, and thoſe of very luxuriant growth, unleſs it be neceſſary to keep ſome to ſupply a vacant place; then of the remaining regular ſhoots, you are to ſelect a greater or ſmaller portion to leave either as a general ſupply for next year's bearing as in the caſe for peach, nectarine,

tarine, apricots, vines, and figs; or only ſome occaſional ſhoots, as in apples, pear, plum, and cherry trees, to ſupply the place of any bad or dead branch.

But as peach, nectarines, apricots, vines, and figs, always bear principally on the year-old wood as before noticed, a general ſupply of young ſhoots muſt be left in every part from bottom to top at regular diſtances, all of which, except the fig, muſt be more or leſs ſhortened according to their ſituation and ſtrength to encourage their furniſhing more readily a proper ſupply of ſhoots in ſpring and ſummer for next year's bearing, as before obſerved, leaving the ſtrongeſt ſhoots always the longeſt, as is more fully explained under each of their reſpective *genera*; but as the figs always bear towards the end of the ſhoots they muſt not be ſhortened.

And with reſpect to the apples, pears, plums, cherries, &c. as they continue to bear on the old branches of from two or three to many years ſtanding, they only require an occaſional ſupply of young wood, according as the branches become unfit for bearing and want removing, ſo ſhould accordingly train in here and there in proper places ſome good regular young ſhoots towards the lower part, to be coming gradually forward to a bearing ſtate, to be ready to replace worn out and other uſeleſs branches; and what ſhoots are not now wanted for that purpoſe cut them out cloſe, not leaving any ſpur or ſtump, as every one of which, as we before obſerved, would puſh out ſeveral ſtrong unneceſſary ſhoots the next ſpring to the prejudice both of the trees and fruit: have particular regard to preſerve the ſhoots at the termination of all the already trained branches entire, not however ſuffer more than one ſhoot to terminate each branch; preſerve alſo carefully all the proper fruit-ſpurs; likewiſe obſerve, that the ſupply of young wood occaſionally reſerved, and the branches in general of theſe trees, ſhould all be trained in at full length, and continued ſo in future, as far as the limited ſpace will admit, and according as any extend above the wall or eſpalier or any where beyond their proper limits, they ſhould be pruned down with diſcretion to ſome convenient bud, or lateral ſhoot, or lower branch, which train alſo entire.

In this Pruning, as in the ſummer dreſſing, it is of importance to have a ſtrict eye to the lower parts of wall-trees, &c. to ſee if there is any preſent vacancy or any that apparently will ſoon happen, in which caſes, if any good ſhoot is ſituated contiguous, it ſhould be trained in either at full length, or ſhorten it to a few eyes to force out two or more ſhoots if they ſhall ſeem neceſſary; for precaution ſhould ever be obſerved in taking care to have betimes a ſufficient ſtock of young wood coming forward to fill up any caſual vacancy, and ſubſtitute a new ſet of branches in place of ſuch as are either decayed or ſtand in need of retrenchment.

Sometimes in wall-trees and eſpaliers there are many large diſagreeable barren ſpurs, conſiſting both of old worn-out fruit-ſpurs, and of cluſters of ſtumps of ſhortened ſhoots projecting conſiderably from the branches, occaſioned by unſkilful Pruning when retrenching the ſuperabundant and irregular ſhoots, which inſtead of being cut out cloſe, are ſtumped off to an inch or two long, and in the courſe of a few years, forming numerous barren ſtumps, as above ſaid, and very little fruit, the trees appear like a ſtumped hedge; it is therefore, in this ſeaſon of Pruning, adviſable to reform them as well as poſſible by cutting all the moſt diſagreeable ſtumps clean out cloſe to the branches, leaving theſe at full length, eſpecially of apples, pears, &c. as before adviſed; and reſerve an occaſional ſupply of young wood in different parts, and thus in two or three years you may reduce ſuch trees to a regular figure and a proper ſtate of bearing.

Bad Pruning ruins many a good tree, as is obſervable in numerous gardens, where the wall trees and eſpaliers appear as juſt above deſcribed, pruned every year, yet never produce any tolerable crop of fruit.

The reaſon is, the operation or art of Pruning is much more generally practiſed than underſtood; different pruners have different ideas of Pruning: many proceed upon little or no principle, and often prune all trees alike, and their idea of Pruning often conſiſts in retrenching annually moſt of the young ſhoots, and ſhorten all the branches of every tree without exception to the great injury of ſome ſorts, and retarding their bearing: likewiſe many pruners in retrenching the ſuperfluous and irregular ſhoots, inſtead of cutting cloſe, as formerly obſerved, they often ſtump them off to about one or two inches long; theſe remaining ſtumps ſhoot out again from every eye, and fills the tree with more numerous uſeleſs ſhoots than before, which being alſo pruned down to ſtumps of an inch or two long, as above, practiſing the ſame every Pruning, ſo as in the

the courſe of a few years every branch is loaded with cluſters of large rugged barren ſpurs, formed wholly of the ſtumps of ſhortened ſhoots, occupying the places where fruit-buds might be expected: it is alſo obſervable, that many pruners think every branch of all ſorts of wall trees whatſoever muſt in the annual Pruning undergo the diſcipline of the knife, ſo ſhorten all without diſtinction and reluctance, often too with ſo much ſeverity on trees that ſhould not be ſhortened, as to deſtroy the very parts where fruit-buds would have been produced, they thinking this general ſhortening neceſſary to ſtrengthen the branches, which, however, in many ſorts, promotes a too vigorous growth, particularly in trees that produce their fruit on natural ſpurs, forming themſelves gradually all along the ſides of the branches, firſt towards the extreme parts, that ſhortening not only cuts off theſe firſt fruitful parts of the branches, but throws the ſap back with ſo much vigour to the remaining buds, that inſtead of forming fruit-ſpurs almoſt every bud puſhes out luxuriant ſhoots, and the trees are continually crowded with unneceſſary wood, cauſing a great annual trouble to retrench it, without the pleaſure of having a quarter of a crop of fruit: beſides the annually cutting out ſo much ſtrong wood is very prejudicial to ſome ſorts of fruit-trees.

Too ſevere Pruning is greatly prejudicial to the health of ſome ſorts of ſtone fruit-trees, in particular, by cauſing them to gum and ſoon decay.

Plums and cherries, in particular, are often greatly damaged by a too ſevere diſcipline of the knife, theſe trees being very liable to gum by large amputations, it is therefore of importance to attend to theſe trees well in the ſummer Pruning, to retrench all the ſuperfluous and irregular ſhoots betimes in the ſummer while quite young, and pinch others occaſionally where wood is wanted to fill vacancies, ſo as to require but little Pruning out of large wood in winter.

But if our former hints in the ſummer and winter Pruning are attended to in retrenching the uſeleſs wood every year at the time adviſed, you will always preſerve your trees free from all incumbrance and every part will be regularly filled with bearing wood, and their general management will prove eaſy.

A general nailing, &c. muſt every year be performed according as we advance with the Pruning.

Therefore it is proper that every tree as ſoon as pruned be directly nailed to the wall, or if eſpaliers, tie them to the treilage; obſerving, that in the winter Pruning, as the work of nailing, &c. will require to be performed more or leſs upon all the branches, we muſt be careful to train them with great regularity, nailing them along horizontally, as ſtraight and cloſe as poſſible, never croſs any of the branches, but train them diſtinct and parallel five or ſix inches aſunder, as formerly adviſed, or in proportion to the ſize of the leaves and fruit of the different ſorts, making the oppoſite branches of each ſide arrange equally in the ſame poſition.

Thus far is principally all we have to advance reſpecting the general mode of Pruning wall and eſpalier trees; particulars for each ſort being noticed more fully under their proper *genera*; but what we have here advanced under this article *Pruning* is to convey ſome general hints to unexperienced pruners, though there are many expedients and reſources, not to be diſcovered but by repeated practice.

### *Pruning Standards.*

Standard fruit-trees require but very little Pruning, for as their branches having full ſcope to extend themſelves every way, they muſt not be ſhortened; beſides, as our ſtandard fruit-trees, conſiſting principally of apples, pears, plums, and cherries, which, as before ſaid, bear fruit on natural ſpurs ariſing towards the upper parts of the branches, which, as obſerved in the wall-tree and eſpalier Pruning, determines that we muſt not ſhorten them, nor practiſe any other Pruning than juſt to reform any great irregularity, &c.

The firſt occaſional Pruning however, neceſſary for ſtandard fruit-trees is the firſt two years of their growth, in order to form their heads ſomewhat regular, by retrenching any irregular ſhoots, and when deſigned to have them form more regular ſpreading heads, it is cuſtomary to prune the firſt ſhoots when a year old down to four or five eyes, in order to force out lateral ſhoots from theſe lower buds the following ſummer, to give the head a proper formation. After this ſuffer the branches to take their natural growth, ex-

cept that, if while the trees are young, any very luxuriant ſhoots ramble away conſiderably from all the others, and draw moſt of the nouriſhment, it is proper to prune them, either by retrenching entirely very irregular ones, or ſhorten others more or leſs, ſo as to cauſe them to branch out conſiſtent with the requiſite form of the head.

But let it be remarked in general, that except in ſuch caſes of reducing irregularities, let the heads of all kinds of ſtandards always branch away as faſt as poſſible, both in length and laterally, agreeable to their natural mode of growing; and they will naturally furniſh themſelves abundantly with bearing wood.

Obſerve however, that as in ſtandard trees of ſome years growth, irregularities and diſorder will occaſionally happen, which ſhould be regulated a little by Pruning the moſt conſpicuouſly irregular and redundant growths; performing it always in winter.

For inſtance; where any branch grows right acroſs others, or in any other aukward direction, to incommode or cauſe confuſion in the head, it ſhould be retrenched cloſe; likewiſe any branch that rambles conſiderably from all the reſt, ſhould be reduced to order, by cutting it down to ſome convenient lower branch, ſo as to preſerve ſome regularity. Where the head is conſiderably crowded with wood, let the worſt of the redundancy be thinned out as regularly as poſſible, cutting them cloſe to their origin; obſerve likewiſe where any vigorous ſhoots ariſe in the heart of the tree towards the bottom of the old branches, and grow upright and crowd the middle of the head, they ſhould be conſtantly retrenched to their very bottom; cut out alſo any very cankered parts, and all decayed wood, and clear off all ſuckers from the root and ſtem.

Standard trees thus diſburthened from any conſiderable irregularities and confuſion, ſo as all the proper branches have full ſcope to ſpread free and eaſy in their natural manner, they will not fail to repay the trouble in the ſuperior quality of their future fruit.

*Pruning Foreſt Trees, &c.*

With reſpect to Pruning of foreſt and ornamental tres, flowering ſhrubs, &c. it is very inconſiderable.

Foreſt trees, &c. muſt be ſuffered to run up as faſt as poſſible, ſo their heads muſt not be ſhortened; all that is neceſſary is, to prune off lateral branches occaſionally from the ſtem, or if while young, any lateral ſhoot of the head is of a very rude rambling growth, and draws all the nouriſhment, it is proper to reduce it as you ſee convenient: but otherwiſe ſuffer the top and all the branches of the head to remain entire, and take their own natural growth; only prune lower ſtragglers occaſionally; obſerving, however, it is very improper to trim up the ſtem too high, as often practiſed to foreſt trees, as ſcarce to leave any head: never, therefore, trim the ſtem much higher than the full ſpread of the head, for a full head is both ornamental and eſſentially neceſſary to the proſperity of the tree. See PLANTING.

And as to the ſhrub kind, they ſhould alſo, for the general part, take their own growth at top; and only prune occaſionally any lower ſtragglers, from the lower part of the ſtem, or any very irregular rambling ſhoot of the head, and all dead wood: but except in theſe caſes, let their heads moſtly ſhoot in their own way, according to their different modes of growth, in which they will appear always the moſt agreeable.

Where, however, it is required to keep ſhrubs low, in any particular compartment, you muſt regulate this as you ſhall ſee convenient, either with a knife or garden-ſhears, though knife Pruning is the moſt eligible.

*Pruning Implements.*

For the purpoſe of general Pruning, ſeveral implements are neceſſary, ſuch as Pruning-knives, ſaws, chizzels, hand-bills, hatchets, &c.

As to Pruning-knives, two or three different ſizes are requiſite, in order to enable us to prune neatly; a ſtrong one for cutting out larger branches, ſhoots, &c. and a ſmall one for the more exact Pruning among the ſmaller branches and ſhoots of peach and nectarine-trees, &c. theſe knives are generally made curving at the point; they ſhould not be too long, broad, and clumſey, but have rather a ſhortiſh narrow blade, and but very moderately hooked at the point, for when too crooked they are apt to hang in the wood, and not cut clean; it is alſo proper to be furniſhed with a ſtrong thick-backed knife, to uſe by way of a chiſſel occaſionally, in cutting out any hard ſtubborn ſtumps, &c. placing the edge on the wood, and with your nailing hammer ſtrike the back of it, and it will readily cut through even and ſmooth.

Pruning hand-ſaws are proper for cutting out any large branch too thick and ſtubborn

for the knife; they ſhould be of moderate ſizes, one of which ſhould be quite ſmall and narrow, in order to introduce it occaſionally between the forks of the branches, to cut to exactneſs.

As ſaws generally leave the cut rough, it is proper to ſmooth it with a knife or a pruning chiſſel.

Pruning chiſſels are neceſſary to uſe occaſionally, both to cut off any thick hard branch or ſtump, and to ſmooth cuts after a ſaw; they ſhould be flat, and from about one to two inches broad; ſometimes large ſtrong chiſſels, fixed on a long pole, are uſed in Pruning or lopping branches from the ſtems of high ſtandard foreſt trees, one man holding the chiſſel againſt the branch, while another, with a large mallet or beetle, ſtrikes the end of the pole.

A hand-bill and hatchet are alſo neceſſary to uſe occaſionally among larger kinds of the ſtandard trees.

All theſe Pruning tools, in their proper different ſizes, may be had at all the cutlery ſhops and ironmongers, alſo of many of the nurſery and ſeedſmen; and as the expence of the whole will be but trifling, every one ſhould furniſh himſelf properly.

PRUNUS, Plum-tree; compriſing alſo the Cherry-tree, Apricot, &c.

This noted genus comprehends different ſorts of valuable fruit-trees, ſome flowering ſhrubs, and beautiful ever-greens; and to ſome it may ſeem ſtrange to ſee the Cherry-tree, Apricot, Laurel, &c. arranged as ſpecies of the Plum-tree, as being formerly conſidered each as a diſtinct genus; but late diſcoveries in botany prove them to be all ſpecies of *Prunus*, and modern botaniſts range them accordingly; all the ſpecies of which are of hardy growth, garniſhed with ſimple, ſpear-ſhaped and oval leaves, and pentapetalous icoſandrious flowers, ſucceeded by drupaceous fruit.

Claſs and order, *Icoſandria Monogynia*.

*Characters.*] CALIX, is monophyllous, bell-ſhaped, five-parted, and deciduous. COROLLA, five large, roundiſh, ſpreading petals. STAMINA, twenty or more filaments inſerted into the calix, and ſhort didymous antheræ. PISTILLUM, a roundiſh germen, ſlender ſtyle, and orbicular ſtigma. PERICARPIUM, a roundiſh dupraceous fruit, incloſing a roundiſh, compreſſed, hard nut.

The principal ſpecies of this genus are—common cultivated Plum tree, having numerous varieties: Bullace-tree—Sloe-tree, or Black-thorn—Cherry-tree, having many varieties—Padus, or Bird Cherry—Apricot-tree, many varieties—and Laurel-tree:—obſerving, that although all of the ſame genus, ſeveral of the ſorts differ materially from one another, we therefore think it eligible to range or claſs them according to their nature or kinds, under the following heads—Plum kinds—Cherry kinds—Apricot kinds—Laurel kinds, &c. all however under the generical name *Prunus*.

*Plum Kinds.*

Under this head we may compriſe three ſpecies, viz.—1. Cultivated Plum-tree, and its numerous varieties.—2. Bullace-tree.—3. Sloe-tree.

1 PRUNUS *domeſtica*.

*Domeſtic Prunus, or common cultivated Plum-tree.*] Grows twenty or thirty feet high, garniſhed with oval ſpear-ſhaped leaves, and with the pedunculi for the moſt part ſingly, terminated by white flowers, ſucceeded by Plums, of many different ſhapes, ſizes, colours, and properties in the varieties.

*Varieties.*] The varieties of the above ſpecies are very numerous, eſpecially of the fruit; all the different ſorts being varieties of this ſpecies, though the trees of the different varieties often differ ſomewhat in their growth, ſome being ſtrong ſhooters, others moderate, and frequently vary in the ſize and colour of their ſhoots and leaves; thoſe bearing large fruit have generally larger leaves in proportion; and the ſhape, ſize, &c. of the fruit is alſo very conſiderable in different varieties, ſome being round, others oval, and ſome being not much larger than Cherries, others as large as eggs; and ſome are yellow, others red, and ſome green, &c. all of which varieties ripen perfectly in our gardens and orchards.

Principal varieties of the fruit are,

*White Primordium, or Jean Hative Plum.*—A ſmalliſh, oblong, yellow Plum, powdered with a white bloom, eſteemed chiefly for its early perfection; ripe the middle or end of July.

*Morocco, or early black Damaſk Plum.*—A middle-ſized, round, blackiſh fruit, powdered with blue, is well flavoured, and diſcharges the ſtone; ripe end of July.

*Little Damaſk Plum.*——A ſmall, round, black, well-flavoured Plum; ripe end of July or beginning of Auguſt.

*Great*

*Great Damaſk Violet Plum.*—A moderately large, roundiſh-oval, dark-blue Plum, covered with a violet bloom, is of a rich juicy flavour, and quits the ſtone; ripe in Auguſt.

*Queen Claude Plum, ſometimes called Green Gage.*—A middle-ſized, round, yellowiſh-green Plum, having a firm deep-green pulp, of a fine rich flavour, and quits the ſtone; ripe in September.

*Little Queen Claude Plum.*—A ſmall, round, whitiſh-yellow Plum, powdered with white, and parts from the ſtone; ripe end of Auguſt and beginning of September.

*Green Gage Plum.*—A middle-ſized, roundiſh, green Plum, ſometimes purpliſh on the ſunny ſide, having a yellowiſh-green firm pulp, of a moſt delicious rich flavour, but does not diſcharge the ſtone freely; is one of our moſt valuable Plums, and the tree a great bearer; ripe the end of Auguſt and beginning of September.

*Varieties.*] There are ſeveral varieties of greeniſh Plums, that go by the name of Green Gages, that are of inferior quality.

*Blue Gage Plum.*—A middle-ſize, roundiſh, blueiſh Plum, of a rich flavour; ripe beginning or middle of September.

*Orleans Plum.*—A middle-ſized, round, pale-red Plum, often of a whitiſh-green colour on the ſide away from the ſun; is of but a middling flavour, and quits the ſtone clean. The tree is of ſpreading growth, a remarkably great bearer, and very profitable for common uſe, and for thoſe who ſupply the markets; ripe end of Auguſt and beginning of September.

*Drap d'Or, or Cloth of Gold Plum.*—A middle-ſized, roundiſh, bright-yellow Plum, ſpotted with red, of an excellent vinous flavour, and adheres to the ſtone; ripe beginning or middle of September.

*Black Perdrigon Plum.*—A middle ſized, oval, dark-coloured Plum, powdered with a violet bloom; is of a fine rich flavour; ripe middle or end of Auguſt.

*Blue Perdrigon Plum.*—A large, roundiſh, blueiſh-coloured Plum, replete with a delicious juice; ripe end of Auguſt.

*White Perdrigon Plum.*—A middle-ſized, oblong, whitiſh-yellow fruit, covered with a white bloom; is firm, juicy, rich, and quits the ſtone; ripe end of Auguſt and beginning of September.

*Roche Courbon, or Red Diaper Plum.*—A middle-ſize, round, fine-red Plum, powdered with a violet bloom, is high flavoured, and adheres to the ſtone; ripe end of Auguſt.

*Red Imperial Plum.*—A large, oblong-oval, flattiſh, pale-red Plum, covered with a whitiſh bloom; is of but a middling reliſh, and parts from the ſtone; ripe middle of September.

*White Bonum Magnum, Mogul or Egg Plum.*—A remarkably large, oblong, egg-ſhaped, whitiſh yellow Plum, powdered with a white bloom, having a firm pulp that cleaves to the ſtone; more eſteemed for culinary uſe, than eating raw: the tree ſhoots ſtrong, with very large leaves; is a great bearer, and the fruit is the largeſt of the Plum kind; ripe beginning or middle of September.

*Red Bonum Magnum, ſometimes called the Great Imperial Plum.*—A very large, oblong, deep-red Plum; not of a rich flavour, but is excellent for preſerving and culinary purpoſes; ripe beginning or middle of September.

*Fotheringham Plum.*—A large, oblong, fine-red Plum, having a fine rich pulp that quits the ſtone; ripe end of Auguſt and beginning of September.

*Brignole Plum.*—A largiſh, oval, yellowiſh Plum, tinged with red next the ſun, having a firm, dry, rich pulp, is in much eſtimation for ſweetmeats; ripe in September.

*Le Royal Plum.*—A large, roundiſh, light-red, finely-powdered Plum, having a juicy ſugary pulp, that cleaves to the ſtone; ripe end of Auguſt and in September.

*Cheſton Plum.*—A middle-ſized, oval, blackiſh-blue Plum, powdered with a violet bloom; ripe towards the middle of September.

*Wentworth Plum.*—A large, oval, yellowiſh Plum, of an acid reliſh, and ſeparates from the ſtone; is a good culinary fruit; ripe in September.

*Mirabelle Plum.*—A ſmall, round, greeniſh-yellow Plum, having a rich pulp, that diſcharges the ſtone, and the tree a great bearer; ripe end of Auguſt.

*Apricot Plum.*—A large, round, yellowiſh Plum, having a firm, dry, ſweet pulp, that ſeparates from the ſtone; ripe beginning or middle of September.

*St. Catharine Plum.*—A large, oblong, oval, yellowiſh-amber-coloured Plum, powdered with a white bloom, having a rich juicy agreeable pulp, adhering cloſe to the ſtone: ripe end of September.

*Imperatrice Plum.*—A middle-ſized, roundiſh, dark-red, finely-powdered Plum, of an agreeable flavour, the pulp adhering to the ſtone; ripe beginning of October.

*Little Green Damaſk Plum.*—A ſmall, round, greeniſh Plum, powdered with a whitiſh bloom, having a green very agreeable pulp adhering to the ſtone; ripe middle or end of of September.

*Pear Plum.*—A moderate-ſize, oval, whitiſh-yellow Plum, of an inferior flavour, eſteemed principally for preſerving; ripe late in September.

*Muſcel Plum.*—A ſmalliſh, oblong, flat, dark-red Plum, of but an indifferent reliſh; ripe in September.

*Damaſcene Plum.*—A ſmall, roundiſh, dark-blue Plum, of a tolerably agreeable acid reliſh, both for eating and culinary purpoſes, and the tree a great bearer; ripe in September.

*St. Julian Plum.*—A ſmall, round, dark-violet-coloured fruit, covered with a mealy powder, has but little reliſh; ripe end of September.

*Cherry Plum.*—A very ſmall, round, cherry-ſhaped red Plum, valued chiefly as a curioſity; and the tree is often planted among flowering ſhrubs, for the ſake of its beautiful bloom in ſpring, and its cherry-like fruit exhibit a pretty variety in ſummer; though by its flowering very early, the bloom is often cut off, and ſeldom ſucceeded by much fruit.

Thus far is principally all the moſt noted varieties of this fruit cultivated in the Engliſh gardens, and in the nurſeries for ſale; though there are numerous other varieties, particularly of the common ſort, growing in the orchards and hedges of farmers, &c. in different parts of the country; all the ſorts being varieties of one ſpecies, firſt obtained from ſeed, and the approved ſorts of them have been multiplied and continued by budding and grafting. See their *Propagation.*

But beſides the above varieties of the fruit, there are alſo the following for ornamental plantations.

Double bloſſom Plum-tree—Gold ſtriped-leaved—Silver ſtriped-leaved—and the ſtoneleſs Plum.

The two following ſpecies, *Bullace-tree* and *Sloe-buſh*, grow wild in hedges, but are ſometimes cultivated both for variety and uſe.

[2]PRUNUS *Inſititia.*

*Wild Plum, or Bullace-tree.*] Grows twelve or fifteen feet high, the branches ſomewhat ſpinous; oval leaves, hairy underneath, and the pedunculi by pairs, terminated by white flowers, ſucceeded by ſmall, round, Plum-like fruit, of different colours in the varieties.

*Varieties are*] Common black-fruited—White-fruited—Red-fruited; all of which ripen late in autumn. They are very acid, though of a tolerably agreeable flavour, and by many eſteemed very wholeſome, if eaten when quite ripe. They grow wild in the hedges in many parts of England, &c. in great abundance, ſo are not often cultivated: a few plants however merit culture for variety, particularly in the ſhrubbery and wilderneſs compartments, where they will effect an agreeable diverſity in autumn when in fruit.

[3]PRUNUS *Spinoſa.*

*Thorny Prunus, Black-thorn, or Sloe-tree.*] Grows ten or twelve feet high, very branchy and buſhy quite from the bottom, armed with ſtrong ſharp ſpines, ſmall, ſpear-ſhaped, ſmooth leaves, pedunculi growing ſingly, terminated by flowers, ſucceeded by ſmall, round, black berries, in autumn. It grows wild every where in hedges and woods, and is very proper to plant for field hedges, being of very quick cloſe growth. See HEDGES.

The above three ſpecies are all that are proper to arrange under this head, conſidered as of the Plum kind in reſpect to the growth of the trees, and nature of the fruit; though the firſt ſpecies only, and its varieties, are proper for general culture.

The trees of all the ſorts are of the deciduous tribe, of hardy growth, and proſper in any common ſoil and expoſure; they all flower or bloſſom profuſely in the ſpring, April, and beginning of May, and make a fine appearance; all the flowers of every ſort conſiſt each of five ſmall petals, and twenty or more ſtamina, the flowers and fruit being produced on ſhort ſpurs ariſing from the ſides and ends of the branches; and the fruit ripens in autumn, gradually in different ſorts from the beginning of July until October; exhibiting a moſt delightful variety in the different colours, ſhapes, and ſizes, of the cultivated Plum kinds in particular, as well as afford a moſt uſeful ſupply for family uſe, both as excellent table fruit, and for various culinary purpoſes, and for preſerving, &c.

With reſpect to the merit of the different ſpecies, &c. the firſt ſort, *Cultivated Plum-tree* and varieties, every one knows their value as fruit-trees, and no good garden ſhould be without a collection of the beſt ſorts; and as to the ornamental varieties, double bloſſom kind and ſtriped-leaved ſorts, as alſo the Cherry Plum, they are proper for decorating the

ſhrub-

ſhrubbery; but the ſecond and third ſpecies, *Bullace-tree* and *Sloe-buſh*, they are only ſometimes admitted in ſhrubbery compartments, &c. for variety, particularly the former, the fruit of which cauſe an agreeable diverſity whilſt growing, and afford variety at table, when all the more richer ſtone-fruits are gone: as to the Sloe-tree however, its principal merit is to plant for forming field hedges, as before obſerved; it grows thick from the very bottom, and makes a ſtrong cloſe hedge.

The *common Plum-tree* and its varieties may be trained both as dwarfs for walls and eſpaliers, &c. and ſtandards and half ſtandards; thoſe however trained againſt walls and eſpaliers generally produce the largeſt and faireſt fruit, ſo ſhould always train ſome of the beſt ſorts in both theſe ways, and may have any of the varieties as ſtandards in the garden or orchard.

*Propagation of all the above Species and Varieties.*

Firſt, the common Plum-tree.—As to the method of raiſing Plum-trees, all the varieties were firſt obtained by ſeed, *i. e.* from the ſtones of the fruit; and the approved kinds, ſo acquired, were afterwards multiplied by grafting and budding, for they do not continue the ſame ſorts from ſeed, as from the ſeed of one tree there may riſe many different ſorts, and probably not one like the mother-tree, nor very few that produce a fruit worth eating; but being in poſſeſſion of any approved ſorts, they may be multiplied at pleaſure, by ingrafting ſhoots or buds of them into any kind of Plum-ſtocks.

The general propagation therefore of Plum-trees is, by grafting and budding, and may alſo be increaſed occaſionally by layers; but the two former are the moſt eligible methods of propagation.

By Grafting and Budding.—This is performed upon ſtocks of any ſorts of the Plum-kind raiſed from the ſtones, ſowed in autumn in beds of good earth, about two inches deep, and when the plants are a year old, they being planted out in nurſery-rows two feet and a half aſunder, and having from one to two or three years growth, they will be in a fit order to graft or bud with the deſired ſorts, which is performed in the uſual way, either low in the ſtock for dwarfs, and at ſeveral feet height for ſtandards. See GRAFTING and INOCULATION. Obſerving, that when the firſt ſhoots from the graft or bud are one year old, thoſe of the trees deſigned as dwarfs for walls, &c. ſhould be headed down within five or ſix inches of the bottom, more particularly of the budded trees, in order to force out laterals from the lower eyes, ſo as to furniſh a proper ſet of branches, proceeding regularly from the bottom of the tree, to cover every part of the wall and eſpalier. But as to ſtandards, their firſt ſhoots may either be ſuffered to run and branch in their own way, or headed to a few eyes, if it ſhall ſeem neceſſary, to force out lower laterals to give the head a more regular ſpreading formation; afterwards, let them all take their own growth.

When the trees thus raiſed by grafting or budding are from one to two or three years old, they are of a proper ſize for final tranſplanting into the garden, &c. though trees of ſix or eight years old may be ſafely tranſplanted; remarking however, the younger they are planted where they are to remain, the ſooner and more firmly they will eſtabliſh themſelves, and form for bearing.

By Layers.—This is performed on the young wood, any time from November till March, chuſing the laſt ſummer's ſhoots, and lay them by ſlit-laying; in one year they will be rooted, they muſt then be ſeparated, and planted in nurſery-rows, and trained either for dwarfs or ſtandards, as may be required.

The double-bloſſom Plum, the two ſtriped varieties, and ſtoneleſs kind, are all propagated by budding or grafting upon any kinds of Plum-ſtocks, either for dwarfs, or half or full ſtandards.

And the Bullace-tree and Sloe-buſh or Black-thorn, are propagated by ſowing the berries or ſtones an inch deep in a bed of common earth in autumn; and the Sloe-tree alſo abundantly by ſuckers from the root.

Obſerve however, that to continue the different varieties of the Bullace tree diſtinct, they muſt be propagated by budding, grafting, or laying.

*Planting them in the Garden, &c. and general Culture.*

The ſeaſon for planting all the ſorts of Plum-trees is any time in open weather, from the fall of the leaf in November until March.

The trees of all the varieties will ſucceed in any common ſoil of a garden or orchard, and in any open expoſure; allot however ſome of the beſt ſorts for walls and eſpaliers, obſerving thoſe for walls ſhould generally have an eaſt or weſt aſpect, or even a ſouth wall for ſome of the choiceſt ſorts; and ſome may alſo be planted againſt a north wall, to furniſh ſome late fruit: and thoſe for eſpaliers

liers may be planted around any of the open quarters, as may alſo the ſtandards.

Firſt of planting and managing the trees deſigned for walls and eſpaliers.

Plant the wall and eſpalier trees eighteen feet diſtance, though if the walls, &c. are rather low, twenty feet diſtance will be requiſite, in order that in default of a proper height, of walling, there may be more ſcope to train the branches horizontally.

Obſerve, if the trees thus planted are quite young, being only of one year's ſhoot from the grafting or budding, they ſhould in March be headed down, as before obſerved, to four or five eyes, to force out lower horizontals, in the enſuing ſummer, which according as they advance in length, train them in horizontally at full length all ſummer long, unleſs you would forward a farther ſupply of lower branches as faſt as poſſible, when you may pinch the young ſhoots in May down to a few eyes, each will throw out ſeveral laterals the ſame year, which train alſo horizontally at full length during the ſummer's growth; and in winter pruning, cut out only any fore-right and back-ſhoots, and train in all the regular ones at full length, for the branches of theſe trees muſt not be ſhortened only occaſionally to procure wood to fill vacancies, becauſe the branches always form fruit-ſpurs firſt towards their extreme parts, which would be deſtroyed by ſhortening, ſo that after having ſhortened the firſt and ſecond years ſhoots occaſionally, as above, and thereby procured a proper ſet of lower horizontals, to give the head its firſt form; let the whole then be trained in entire about four, five, or ſix inches aſunder, and, according as the trees ſhoot, every ſummer train in a neceſſary ſupply of the regular ſhoots to fill the wall, &c. at the ſame time retrench ſuperfluities and irregular growths, and train the ſupply of regular wood ſtill at full length at the above diſtances; and thus the trees will ſoon cover a large ſpace, and the ſame branches, not ſhortened, will continue bearing many years. See PRUNING.

For all the ſorts of Plums bear principally upon ſpurs, half an inch or an inch long, ariſing from the ſides of the branches, of from one or two to many years old, when trained always at full length; but if ſhortened, they would throw out a multiplicity of uſeleſs wood and hardly any fruit-ſpurs; therefore ſhorten none, except ſome occaſional ſhoots to fill any caſual vacancy, and always train the general branches at full length, both in the ſummer and winter pruning.

Obſerve all the ſorts of wall and eſpalie Plum-trees ſhould be pruned twice every year, a ſummer and a winter pruning, in order to retrench ſuperfluities of each year, and all foreright and other irregular ſhoots, and bad wood, and to train in a neceſſary portion of young wood where wanted to fill vacancies or to ſupply the place of decayed, worn-out, and other bad branches, that may caſually occur, obſerving the general directions for ſummer and winter pruning, under the article PRUNING.

Standard Plum-trees may be trained both as full ſtandards and half-ſtandards, budding or grafting the former ſix feet high, and the latter only three or four; or both kinds may be worked low in the ſtock, and the firſt ſhoot trained to thoſe heights for a ſtem, then let them branch away and form a head.

Theſe ſtandards may be planted both in the garden and orchard, at from about twenty to thirty feet diſtance; which having had their head previouſly ſhortened in the nurſery when one year old from budding, &c. If thought neceſſary, in order to force out lower branches to give the head a ſpreading form, they ſhould now be planted with their heads entire, all but retrenching any irregularity; and ſhould afterwards be permitted to take their natural mode of growth, except juſt reforming occaſionally any croſs placed or very crowded branches, and all dead wood.

*Cherry kinds.*

PRUNUS *Ceraſus*, or Cherry-tree.

The Cherry was formerly placed as a diſtinct genus (*Ceraſus*), but its *characters* proving the ſame as the Plum, and both ſorts readily take by budding or grafting upon one another, it is now retained as a ſpecies of *Prunus*. There is but one ſpecies of the cultivated Cherry, but which, like the Plum, ſports exceedingly in variety; there are however ſeveral ſpecies of the Cherry kind, as Common Cherry-tree—Wild Cherry-tree—Bird Cherry, &c. the firſt of which and its varieties is the principal ſpecies for general culture for the fruit; likewiſe ſome of the Wild Cherry; all the others are for the ſhrubbery and other ornamental plantations.

The ſpecies are,

1 PRUNUS *Ceraſus*.

*Ceraſus, or Common Cherry-tree.*] Grows twenty feet high, or more, garniſhed with oval cluſters of lanceolate, ſmooth leaves, umbellate flowers, ſucceeded by cluſters of roundiſh red fruit of different ſizes and properties in the varieties.

*Varieties.*

*Varieties.*] The above ſpecies comprehends many varieties, the moſt material of which are the following.

*Common Red Kentiſh Cherry.*—The tree forms a ſpreading head, with numerous ſlender branches, bearing round bright-red Cherries, of a ſharp acid reliſh, unleſs permitted to hang till dead ripe, when they become of a dark-red colour, and of a high flavour, is a remarkably great bearer, and proper to cultivate where large quantities are required for ſale, as alſo profitable for private uſe, and if full ripe, is an excellent Cherry; ripe in July.

This variety is ſuppoſed to be the original kind, and that moſt of the other ſorts were firſt raiſed from it.

*Little May Cherry.*—The tree a moderate ſhooter, having ſlender ſhoots and ſmall leaves, and ſmall, round, red fruit, valued chiefly for its early perfection; ripe end of May or beginning of June.

*Common May Duke Cherry.*—The tree large, ſpreading, and a great bearer, having large, round, dark-red, very fine eating Cherries; ripe ſometimes in the end of May, but moſtly in June.

*Arch Duke Cherry.*—The tree large, branching ſtrong and erectly, having larger, round, dark-red fruit; ripe end of June and in July.

*White Heart Cherry.*—The tree is of very large ſpreading growth, producing heart-ſhaped, whitiſh fruit, tinged with a red next the ſun; ripe in June and July.

*Red Heart Cherry.*—A larger, heart-ſhaped, red-coloured, excellent Cherry; ripe June and July.

*Black Heart Cherry.*—A large, heart-ſhaped, very dark-red, rich-flavoured Cherry; ripe end of June and in July.

*Amber Heart Cherry.*—A middling-ſize, heart ſhaped, amber-coloured fruit; ripe middle or end of July.

*Ox Heart Cherry.*—A very large, heart-ſhaped, red Cherry; ripe middle or end of July.

*Bleeding Heart Cherry.*—A large, longiſh, heart-ſhaped, deep-red beautiful Cherry, but the tree no great bearer; ripe middle or end of July.

*Hertfordſhire late Heart Cherry.*—A middle-ſize, heart-ſhaped, firm, good Cherry; ripe end of July and beginning of Auguſt.

*Carnation coloured Cherry.*—A very large, roundiſh, white and red, beautiful, firm Cherry; ripe end of July.

*Lukeward Cherry.* A middle-ſized, roundiſh, dark-coloured, very good Cherry; ripe end of July.

*Morello Cherry.*—The tree a moderate ſhooter, but ſpreading, with numerous ſlender branches, and a great bearer, producing large, round, dark-red fruit, having a tender juicy pulp, of a ſharp acid taſte; but if properly ripened in a ſunny expoſure, is of a rich agreeable reliſh. The trees being generally planted againſt a north wall never ripen the fruit perfectly till late in the ſeaſon, but ſome ſhould alſo be planted on a ſouth wall, to have the full ſun, where the fruit will ripen three weeks ſooner, and attain a much richer flavour, and prove an excellent Cherry for the table; ripe in Auguſt and September.

*Coroun, or Corone Cherry.*——A middle-ſize, round, black, very juicy, excellent Cherry, and the tree a great bearer; ripe end of July and in Auguſt.

*Double-bloſſomed Cherry.*—The tree is of a moderate growth, and produces large, very double, pure-white flowers, of great beauty placed on long ſlender foot ſtalks; each flower being as double as any roſe, riſing in great abundance all over the tree, and make a fine ornamental appearance in the ſhrubbery and other compartments of the pleaſure-ground; flowering in May, but rarely any fruit, except ſometimes from ſome ſemi-double flowers.

*Red-bloſſomed Cherry.*—Having pale-red flowers.

Theſe are all the principal varieties of Cherries proper for general culture, and trees of all the ſorts are ſold at the public nurſeries by the above names, annexed to each variety, all of which are deciduous, and of hardy growth, will ſucceed in any common ſoil and ſituation, and bear well both in dwarfs for walls and eſpaliers, and in ſtandards of all ſorts. See their culture.

²PRUNUS *Avium.*

*Great Wild Cherry-tree.*] Grows forty or fifty feet high, having oval ſpear-ſhaped leaves, downy underneath, and umbellate ſeſſile cluſters of white flowers, ſucceeded by ſmall round fruit of different properties in the varieties.

*Varieties are.*] Common, ſmall, black, wild Cherry—Red wild Cherry—Larger fruited wild Cherry; ripe end of July and in Auguſt.

The trees of all the varieties of this ſpecies grow very large, and grow wild in England, &c. in woods and hedges, but are pro-

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per to cultivate both as fruit, foreſt, and ornamental trees, and are often planted in gardens, avenues, lawns, and parks, as they make a fine appearance in ſpring when in bloſſom, and bear great crops of fruit, which ſucceed the varieties of the cultivated Cherry, and though ſmall, is of an agreeable flavour; and conſidered as timber-trees they are greatly eſteemed by the cabinet-makers, turners, and ſome other trades, the timber being of a fine reddiſh colour.

The following are the Bird Cherry kinds, cultivated chiefly for ornament, the fruit being not good to eat; but being greatly coveted by the birds, have the appellation of Bird Cherry.

[3]PRUNUS *Padus.*

*Padus, or common Bird Cherry.*] Grows fifteen or twenty feet high, of a ſhrub-like growth, and with a ſpreading head, large, oblong, rough, ſerrated leaves, having two glands at the back of their baſe, and long looſe cluſters of white flowers, ſucceeded by ſmall, round, black fruit in Auguſt.

*Variety.*] *Corniſh cluſter Bird Cherry*, having generally a taller upright ſtem, a more compact regular head, broader leaves, diſtinguiſhed however with two glands at the back of the baſe like the other, and with ſhorter, more compact cluſters of flowers, ſucceeded by larger red fruit.

The common ſort grows wild in hedges in the northern parts of England.

[4]PRUNUS *Virginiana.*

*Virginian Bird Cherry.*] Grows thirty feet high, dividing into a very branchy head, having a dark-purple bark, oval, ſlightly ſerrated, ſhining, green leaves, having two glands at the fore part of the baſe, and long cluſters of white flowers, ſucceeded by ſmall, round, berry-like, black fruit.

[5]PRUNUS *Canadenſis.*

*Canada Dwarf Bird Cherry*] Grows but four or five feet high, branching horizontally near the ground, and have ſmooth branches, broad, ſpear-ſhaped, rough, downy leaves, without glands, and long cluſters of white flowers, ſucceeded by ſmall, round, berry-like, black fruit; ripe in autumn.

[6]PRUNUS *Mahaleb.*

*Mahaleb, or Perfumed Cherry.*] Grows ten or fifteen feet high, having ſmooth whitiſh branches, ſmall, oval, ſhining-green leaves, and corymbous cluſters of white flowers, ſucceeded by ſmall fruit.

All the above five ſpecies of the Cherry kind arranged under this head, flower commonly in April and May, ſo abundantly as in a manner to cover the branches, each flower having five ſmall petals, and twenty or more ſtamina, as obſerved of the Plums, ſucceeded by fruit all of the Cherry kind; ripening in different ſorts from May until September; remarking however, that the fruit of two ſpecies only are eſculent, *i. e. Common Cherry-tree* and its varieties, and the *Great Wild Cherry*; thoſe of the other ſpecies being of a diſagreeable reliſh.

All the varieties however of the common Cherry-tree and great Wild Cherry merit culture for their fruit; and as Cherries in general are valuable as a moſt refreſhing fruit in the heat of ſummer, and for their attaining the earlieſt perfection for eating raw of any of our tree fruits, every good garden ſhould be furniſhed with a collection of the trees of different ſorts, but principally of the common Cherry and varieties.

But the double-bloſſom kind, &c. and all the ſorts of Bird Cherry and the Perfumed Cherry are employed principally in ſhrubberies for ornament and variety.

The common Cherry, in all its varieties, is cultivated both in gardens for walls, eſpaliers, and ſtandards, and in orchards, both in aſſemblage with other ſtandard fruit-trees; and in many places whole orchards of them, in full ſtandards, are planted, in order to ſupply the markets with the fruit. In gardens, however, it is proper to have a portion both as dwarfs for walls and eſpaliers, and half and full ſtandards; and if ſome of the beſt kinds are planted againſt walls of different aſpects, they will furniſh a ſucceſſion of ripe Cherries from May until September, beſides the ſupply from the eſpaliers and ſtandards; for the trees will bear in all expoſures; but it is highly proper to have ſome of the earlieſt and other more valuable kinds againſt a ſouth or ſouth-eaſt wall; thoſe in the ſouth expoſures will ripen ſooneſt, and will be ſucceeded regularly by the others in the eaſt, weſt, and north aſpects; a north wall however is very commonly allotted for Morello Cherries in particular; but as this is a moſt excellent Cherry when well ripened, it is eligible to allow a ſhare of the trees a ſouth aſpect, where they will ripen ſooner and in greater perfection; and thoſe planted againſt a north wall will ſucceed them, and continue until September. However, where there is ſcope of ground and different

different ſituations, it is adviſable to plant ſeveral different ſorts accordingly, whereby a conſtant ſupply of ripe Cherries may be obtained for near three months.

Conſiderable orchards of theſe trees are planted in ſome parts, particularly in Kent, for the ſupply of the London markets, conſiſting principally of the Kentiſh and Duke Cherries, as being the moſt certain beſt bearers; but it is proper to plant ſome of all the varieties.

The Wild Cherry is always trained for ſtandards, and planted in any open ſituation. Great quantities of them are planted in hedge-rows, round fields, in ſome of the counties round London, for the ſake of the fruit to ſupply the markets.

The mode of bearing of all the varieties of theſe trees is, both on the year-old wood, and that of many years, principally upon ſhort ſpurs ariſing from the ſides of the branches, if not ſhortened, but if ſhortened they throw out wood-ſhoots and no fruit-ſpurs, therefore the branches of theſe trees muſt not be ſtopped, but ſuffered always to remain at full length.

All the ſorts of theſe trees will proſper in any common ſoil, capable of producing good crops of eſculent herbs and roots, graſs and corn, &c.

*Method of propagation and general culture.*

The method of propagation for all the varieties of the Common Cherry-tree is by grafting and budding them upon ſtocks of the Wild Black and Red Cherry, raiſed from the ſtones of the fruit: they will, however, grow upon any ſort of Cherry-ſtock; and they will likewiſe take upon Plums, though plum-ſtocks are not adviſed for general uſe; they will alſo grow upon laurel-ſtocks, which, however, is only ſometimes practiſed for curioſity, ſuffering a ſmall part of the ſtock to grow up to ſhew the ſingularity of the two ſorts growing upon the ſame root. All the varieties will likewiſe grow upon the Bird-cherry, but this ſhould only be practiſed when required to dwarf any trees as much as poſſible; which being grafted on the common or Canada Bird-cherry, are proper to plant in pots, for forcing in frames, or to plant in the borders of a forcing-frame. See FORCING FRAME, However, for general uſe, always uſe the Wild Cherry-ſtocks, as being the freeſt ſhooters and of longeſt duration, though in default of theſe, may uſe any ſort of common Cherry-ſtocks.—And as to the method of raiſing them, it is from the ſtones of the fruit, ſowed in autumn in beds of light earth, covering them near two inches deep, they will come up in the ſpring; and in autumn or ſpring following, if the plants are ſtrong, tranſplant them in nurſery-rows two feet and half aſunder, to remain for grafting, &c. which, when about the ſize of a large gooſe-quill or little more, they will be fit to work for dwarf trees; but for ſtandards they muſt have at leaſt four years growth, becauſe they muſt be grafted at ſix feet height.

The grafting and budding all the ſorts is performed in the uſual way, though grafting is moſt to be recommended for general practice, as they are not ſo liable to gum as budded trees; and whip-grafting is the moſt eligible method; obſerving to graft or bud the dwarfs near the ground, and the half and full ſtandards from three to ſix feet high: the grafted trees will ſhoot the ſame year, and the budded ones not till the ſpring following.

Obſerve, that when the firſt ſhoots from the graft or bud is a year old, thoſe of the dwarf trees for walls, &c. muſt be ſhortened down in March or beginning April, to five, ſix, or eight inches long, according to their ſtrength, to procure lateral ſhoots to form the head; but as to the ſtandards, they may be ſhortened or left entire as the caſe requires. If you would have them form a ſpreading head, the firſt ſhoots may alſo be ſhortened to force out lower branches; after this let the branches both of the dwarfs and ſtandards remain moſtly at their full length; and whilſt the trees continue in the nurſery, train thoſe deſigned for walls, &c. to ſtakes, in a proper poſition, and pinch young ſhoots in ſummer to procure more branches which ſtill continue entire.

When the trees are from one or two, to five or ſix years old, they are proper for final tranſplantation into the garden and orchard, though if planted when their heads are not more than two or three years old, they will ſucceed much better than larger trees.

The ſeaſon for planting them may be any time, in open weather, from the end of October, or beginning of November, till March.

Plant the wall and eſpalier trees eighteen or twenty feet diſtance; and if the walls are tolerably high, may plant a half or full ſtan-

dard in the ſpaces between the dwarfs, that whilſt theſe cover the bottom and middle, the ſtandards cover the upper part of the wall.

The management of theſe trees, thus planted againſt walls, and eſpaliers, is principally as follows.—Firſt, obſerve, that if they were planted when only one year old, from the grafting, &c. with the firſt ſhoot from the graft or bud entire, they ſhould be pruned ſhort in March or beginning of April, as obſerved in their nurſery culture, to furniſh lateral branches; but if they were headed in the nurſery, and horizontals thereby obtained, they muſt not be ſhortened now nor hereafter, except occaſionally pinching ſhoots to fill a vacancy, for as the fruit-ſpurs firſt riſe towards the upper ends of the branches, a general ſhortening would not only cut away the firſt fruitful parts, but force out a great deal of uſeleſs wood; let therefore the neceſſary branches ariſing every year after the firſt heading down, be trained horizontally at full length, five or ſix inches aſunder, and if wood is wanted pinch ſome adjacent young ſhoots in May or early in June, or ſhorten it in the ſpring following, and it will puſh forth two or three laterals; being careful to retrench all fore-right and other irregular-placed ſhoots, and continue training the regular branches ſtill at full length, at equal diſtances, till they have filled the allotted ſpace of walling or eſpalier; thus, by arranging the branches entire, they will ſoon ſpread conſiderably, and emit numerous fruit-ſpurs all along their ſides, and in two or three years bear abundance of fruit.

Obſerve the bearing wood does not want renewing annually; but the ſame branches continue bearing ſeveral years, and only wants renewing with young wood occaſionally, as any branch becomes barren or an ill bearer.

They muſt, however, be pruned twice every year; a ſummer pruning early in the ſeaſon, to retrench all evidently ſuperfluous ſhoots ſoon after they are produced, likewiſe all fore-right and other ill-placed ſhoots, and rank wood, as ſoon as poſſible; and to pinch ſhoots where wood is wanted, ſo as there may be as little pruning as poſſible upon the older wood, which is apt to gum by much cutting, retaining however a general moderate ſupply of the regular-placed ſhoots, to chuſe from in the winter pruning, training the whole at full length: and in winter pruning, retrench any caſual worn-out branch or decayed parts, retaining young in their ſtead; and cut out all ſuperfluous or unneceſſary ſhoots, reſerved this ſummer, not now wanted, leaving only ſome well-placed ones in any vacant ſpaces; then nail all the branches regularly to the wall, &c. ſtill at full length. See SUMMER and WINTER PRUNING.

Obſerve in both ſeaſons of Pruning, in cutting out the uſeleſs wood, always to cut every thing quite cloſe. See PRUNING.

Likewiſe be particularly careful to preſerve the fruit-ſpurs, only retrenching ſuch as become very old, unſightly, and barren.

Standard Cherries ſhould be planted twenty-one feet diſtance at leaſt, though, if for a whole orchard, twenty-four feet, or eight yards diſtant every way will be requiſite. Obſerve that the firſt ſhoots having been previouſly ſhortened in the nurſery, if thought neceſſary, to promote lower branches to form the head, plant them now with their heads entire, except juſt reducing any irregular growth, and ſuffer them to branch every way, and ſhoot in length as faſt as they are able, not ſhortening any, and all the branches will ſoon form numerous fruit-ſpurs.

Very little Pruning is required for Standard Cherries, and the leſs the better, as too much uſe of the knife cauſes them to gum and canker; therefore, all that is neceſſary is, occaſionally to retrench any very irregular-growing branch, and all decayed wood.

The Double-bloſſomed Cherry is alſo propagated by grafting or budding, like the other varieties, upon any kind of Cherry-ſtocks, and may be trained both as dwarfs and half and full ſtandards, to effect the greater variety in the plantations.

The Wild Cherry-tree is eaſily raiſed from ſeed, i. e. the ſtones of the fruit; though if any variety produces a larger and finer fruit than common, it may be continued by grafting, &c.—To raiſe them, however, from the ſtones, procure a quantity in autumn, when the fruit is dead ripe, and ſow them in beds of light earth an inch and half deep; they will come up in the ſpring, and after having one or two years growth, plant them out in nurſery-rows, with their tops entire; here train them up for ſtandards, with ſtems ſix feet high, then let them branch out every way to form heads.

They may be planted out as ſtandards in gardens, orchards, or any open grounds for

for the fruit, and in ornamental plantations of foreſt trees.

All the ſorts of *Bird Cherry* are alſo propagated plentifully by the ſeed or ſtones of the fruit; ſowed in the autumn in light earth, near an inch deep; the plants will riſe in the ſpring, and in a year after ſhould be planted out in nurſery-rows two feet aſunder, to remain a few years till fit for the ſhrubbery, &c.

Theſe ſorts may alſo be propagated by layers, which will readily ſtrike root and be fit for tranſplanting in one year. They will alſo grow by cuttings planted in autumn.

The *Perfumed Cherry* is alſo often propagated by grafting upon any ſort of Cherry-ſtocks, raiſed as before directed in the propagation of the common Cherry-tree, and may alſo be tried by layers.

*Apricot kinds.*

PRUNUS *Armeniaca.* Apricot-tree.

Under this head is ranged only one ſpecies, the *Armeniaca* or Apricot, a choice fruit tree, comprehending many valuable varieties of the fruit: it was formerly ranged as a diſtinct genus (*Armeniaca*), but is now a ſpecies of PRUNUS.

Claſs, order, and characters the ſame as the Plum-tree, (*Prunus domeſtica.*)

The ſpecies is,

PRUNUS *Armeniaca.*

*Armeniaca, or Apricot-tree.*] Grows twenty feet high, with a large ſpreading head, having reddiſh ſhoots, large nearly-heart-ſhaped leaves, and cloſe-ſitting pale-red flowers, riſing all along the ſides of the young branches; ſucceeded by large roundiſh fruit, of a yellow and reddiſh colour in different varieties.

The moſt noted varieties of this fruit in the Engliſh gardens are,

*Early White Maſculine Apricot.*—A ſmall round whitiſh yellow fruit, ripe towards the middle of July.

*Early Red Maſculine Apricot.*—A ſmall round fruit, reddiſh next the ſun, and of a juicy agreeable flavour; ripe middle or latter end of July.

*Orange Apricot.*—A large roundiſh fruit of a deep-yellow colour, tinged with red next the ſun, having a firm but rather dry pulp, is however a handſome fruit; ripe beginning or middle of Auguſt.

*Algiers Apricot.*—An oval ſomewhat compreſſed pale-yellow fruit, is tolerably juicy and well flavoured; ripe early part of Auguſt.

*Roman Apricot.*—A large, roundiſh, yellow fruit, firm, juicy, and well flavoured; ripe beginning or middle of Auguſt.

*Turkey Apricot.*—A very large, oval, compreſſed, deep-yellow fruit, having a firm well flavoured pulp; ripe beginning or middle of Auguſt.

*Temple Apricot.*—A middle-ſized, roundiſh, compreſſed, deep-yellow, firm, good fruit; ripe middle of Auguſt.

*Breda Apricot.*—A large, roundiſh, deep-yellow fruit, having an orange-coloured pulp, is an excellent Apricot, and the tree a good bearer both againſt walls and in eſpaliers and ſtandards; ripe middle or end of Auguſt.

*Bruſſels Apricot.*—A moderate-ſized roundiſh-oval fruit, ſpotted with red next the ſun, the other ſide yellow, having a deep orange-coloured, firm, high flavoured pulp; and the tree bears well againſt a wall and in ſtandards; ripe middle and end of Auguſt.

All the varieties of theſe trees bloſſom early in the ſpring, about the end of February and in March, ariſing principally from the ſides of the young ſhoots of the former year, immediately from the eyes or buds; alſo ſometimes upon ſpurs from the two years old wood, and the flowers are ſucceeded by young fruit in April, encreaſing gradually in magnitude till July and Auguſt, when they attain perfection; obſerving they ſhould be gathered before they become quite ripe, otherwiſe they will eat very mealy and with no flavour, but being gathered as ſoon as one ſide becomes a little ſoft, and while the fruit remains entire and firm, they will then eat briſk and agreeably flavoured.

As theſe trees bloſſom and ſet their fruit early in ſpring, often whilſt ſharp froſts and cutting blaſts prevail, frequently deſtroying moſt of the bloom and newly ſet fruit, ſo that they ſometimes have but very thin crops, for which reaſon they require a ſheltered warm ſunny ſituation in this country. In favourable ſeaſons, however, they ſometimes produce five times more fruit than they can nouriſh or bring to due perfection, in which caſe the fruit is always thinned when about the ſize of ordinary cherries, and thoſe thinned off are excellent for tarts.

But the trees of moſt of the ſorts require to be trained againſt a warm wall, in order both to protect their early bloſſom and young

fruit from the injuries of the weather, and to promote the more early and perfect ripening of the Apricots; they will ſucceed in an eaſt or weſt aſpect. It is, however, proper to allow the early, and ſome other kinds, a ſouth wall to effect a variation in the times of ripening.

Some ſorts will alſo bear tolerably in eſpaliers and ſtandards, particularly the Breda and Bruſſels Apricot.

Apricots are valuable ſummer fruit for ſeveral different purpoſes. Green and young for tarts; for which purpoſe, being gathered before the ſtone becomes hard, make the moſt excellent tarts or pies of any fruit ſo early in the ſeaſon. When ripe are very fine table fruit, provided they are gathered before they become ſoft and mealy. And being preſerved in ſugar is an excellent ſweetmeat.

*Method of propagation and general culture.*

Theſe trees are propagated by budding upon any kind of Plum-ſtocks.

The ſtocks for this purpoſe are raiſed from the ſtones of the fruit, ſowed in the autumn in beds of light earth two inches deep; they will come up next ſpring, and in autumn or ſpring following, the plants will be fit to plant out in nurſery-rows, and in a year or two they will be fit to bud for dwarfs for walls, &c. but for half ſtandards and ſtandards they muſt have three, four, or five years growth, and trained up with ſtems from three or four to ſix feet high—though ſometimes the budding for ſtandards is performed low in the ſtock, and the firſt ſhoot trained up for a ſtem.

The budding is performed in Auguſt, being careful to procure ſhoots for the buds from trees of the beſt ſorts, as proved by the fruit they bear; performing the work of budding them in the uſual way. See INOCULATION. The buds will not ſhoot till ſpring, at which time, before they begin to puſh, head down the ſtock a little above the bud, ſoon after which the buds will ſhoot and advance rapidly, and by autumn form a large ſhoot of a yard or more long, and the trees are then proper for planting out for good; obſerving, that whether they remain in the nurſery, or are tranſplanted into the garden, the above firſt ſhoot from the bud muſt, in March following, be headed down to four or five eyes, to procure lower horizontals, as obſerved of the Plums and Cherries.

When, however, the trees are of one year's growth, with their firſt ſhoots or head entire, they are of a very proper ſize for planting out finally where they are to remain. They may be planted any time in open weather from October until the beginning of March, chuſing a ſouth wall for the early, and ſome other kinds to come in forward; but as thoſe expoſed to the full ſouth ſun are apt to become ſoon mealy, it may be proper to plant the principal ſupply againſt eaſt and weſt walls.

They do not require any particular ſoil or compoſt, but will ſucceed in any common ſoil of a garden; previouſly trenching the borders two ſpades deep.

Plant them in a range cloſe along the wall, at eighteen feet diſtance, with their heads entire for the preſent, which faſten either to the wall or to ſtout ſtakes, one to each tree, to preſerve them ſteady until ſpring, when they muſt have their firſt pruning, &c.

Their management, after being planted in the garden, is as follows: in the firſt place obſerving, that if the trees are only one year old, with their firſt head from the bud entire, they muſt be headed down in the ſpring, as aforeſaid, to four or five eyes, to force out branches below; after this give the trees water in dry weather, and they will readily puſh out ſhoots from all the remaining eyes, which in ſummer nail up regularly to the wall at their full length, and if any fore-right or back ſhoots come out, rub them off, being careful to continue the regular ſhoots to the wall all ſummer and the following winter; and in ſpring ſhorten each ſhoot to about eight, ten, or twelve inches, according to their ſtrength, leaving the lowermoſt ones, on each ſide, rather the longeſt; this pruning ſhort being ſtill neceſſary in order to procure a farther ſupply of lower branches, that every part of the wall may be occupied quite from the bottom, having particular attention to preſerve nearly an equal number of branches arranging on each ſide of the tree, and nail them cloſe to the wall in a horizontal poſition, about five or ſix inches aſunder. The ſummer following each horizontal will puſh out three or four, or more, new ſhoots, of which, if any riſe fore-right and behind the branches, rub them off early in the ſeaſon, and nail in all the regular ſide ſhoots, at full length, all ſummer, except it is neceſſary to pinch any particular ſhoot early in the ſummer to fill a vacancy as

ſoon

ſoon as poſſible. In the winter pruning examine if there be any ſuperfluities or irregular growths left in ſummer, cut them out cloſe, and let all the regular-placed neceſſary ſhoots be ſhortened, though they ſhould not now be pruned ſo ſhort as in the two firſt years, only cutting each ſhoot according to its ſtrength, from about eight or ten, to fifteen or eighteen inches long; for we may now ſuppoſe the head of the tree to be tolerably well formed, ſhould therefore prune ſo as to obtain both a farther ſupply of wood, and a crop of fruit; and remarking, that as theſe trees bear principally upon the young wood of a year old, it is eligible to train in a general ſupply of young ſhoots, of each year, in every part; the ſame ſhoots producing, at the ſame time, both a crop of fruit and a ſupply of wood for next year's bearing, ſtill remembering that the annual ſupply of wood muſt always be ſhortened in the winter pruning, for if left entire, they would produce only ſome ſhoots near the top, and leave the bottom naked, ſo as, in a few years, the whole tree would become very thin of bearing wood below, and bear only a little towards the extreme parts of the branches; this therefore determines that, in winter pruning, the ſhoots ſhould always be more or leſs ſhortened according to the ſtrength of the tree, ſituation and ſtrength of the reſpective ſhoots, in order to obtain a neceſſary ſucceſſion of young wood annually in proper ſituations, ſo as to continue every part of the tree from the bottom to the extremity, every way regularly filled therewith for bearing: obſerve, likewiſe, that as theſe trees bear alſo upon ſhort ſpurs, ariſing upon the two years old branches, it is proper to preſerve them wherever they appear, only retrenching ſuch as project conſiderably fore-right; leaving all thoſe of one or two inches long, keeping in mind however that the young ſhoots, of one year's growth, are the principal bearers: thoſe produced one year bear fruit the next, and a general ſupply muſt be every year retained, and not ſhortened in ſummer, which would force out laterals from every eye, and ſpoil the ſhoots for next year's bearing; but in winter pruning a general ſhortening, more or leſs, is neceſſary, and the whole tree then regularly nailed to the wall.

Obſerve, they muſt be pruned twice every year, a ſummer and a winter pruning.

The ſummer pruning conſiſts in reforming the irregularity of the numerous ſhoots annually produced in this ſeaſon, beginning in May or early in June, and rub off cloſe all fore-right and back ſhoots, and all evident ſuperfluities and very rude growths; retaining, however, in every part, a full ſupply of the regular ſide-ſhoots, as ſucceſſion-wood for next year's bearing, training them in at full length, as before directed, to remain till the winter pruning, for it is of importance to leave more than a ſufficiency of the well-placed ſhoots at this ſeaſon, to have plenty in every part to chuſe from in the general winter pruning, See PRUNING.

And the winter pruning comprehends a general reform among all the branches and ſhoots, ſuch as the retrenching all worn-out and old naked branches ill furniſhed with bearing wood, as they from time to time occur, to make room for thoſe furniſhed with proper young ſhoots of the preceding ſummer; at the ſame time ſelecting and retaining, in every part, the beſt of the ſaid ſhoots for next ſummer's bearing, cutting out cloſe all the ſuperfluous or unneceſſary and ill-placed ſhoots, as well as part of the former year's horizontals in every part of the tree, to make due room to train the neceſſary ſupply of young wood at proper diſtances; being careful in retrenching the old wood, occaſionally to prune it down either to a young ſhoot, or to ſome convenient branch it ſupports, and is furniſhed with one or more ſuch ſhoots, ſo as every branch may alſo terminate in a young ſhoot for its leader, cutting off all ſmall ſhoots ariſing from the ſides of the main ones, and let the general ſupply of young wood in every part be now ſhortened, according to their ſtrength, for the reaſons before given. The ſmaller ſhoots cut to about eight or ten inches, the middling ones to twelve or fifteen, and the ſtrong ſhoots to eighteen inches or two feet long, pruning them generally to a wood-bud, in order to obtain a ſhoot at the end for a leader, which will draw nouriſhment to the fruit. Cut out alſo all dead wood and cankered parts, and decayed ſpurs and ſtumps; then, as ſoon as one tree is pruned, let it be directly nailed, which ſhould now be performed with great regularity, training all the branches, &c. horizontally, as ſtrait and cloſe to the wall as poſſible at equal diſtances. See PRUNING.

Obſerve, when any of theſe trees are of a ſtrong vigorous growth, they ſhould be treated according to their nature; in ſuch caſe,

caſe, therefore, it is adviſable to leave the ſhoots thicker, and ſhorten them leſs in proportion, that by dividing the ſap among many, and a greater extent of branches, it checks the luxuriancy which would take place in a ſmaller number.

For the more wood we cut out of a vigorous tree, and the more the ſhoots are ſhortened, the more vigorous will the tree ſhoot, and produce but very little fruit.

But the natural inclination of very vigorous trees ſhould in ſome meaſure be indulged, by training as many branches as can be conveniently laid in, and ſhortening them but moderately, ſome very luxuriant ones hardly at all, which being practiſed two or three years, it will reduce them to a moderate growth and good ſtate of bearing, when they may be treated in the common way.

But as the management of this tree, and the Peach and Nectarine, are nearly the ſame, in reſpect to pruning, &c. as they all bear on the young wood, we refer to that article, where full particulars of pruning and training theſe kind of trees are exhibited, which, for the general part may be applied to the Apricot-tree. See AMYGDALUS *Perſica.*

Standard Apricots are ſometimes planted, and in ſome favourable ſeaſons bear tolerably, particularly the *Breda* and *Bruſſels Apricot*, either in half or full ſtandards; the half ſtandards will be more out of the power of the winds and cold air.

They ſhould be planted in a ſheltered warm ſituation, and their culture is the ſame as other ſtandard fruit trees; they require hardly any pruning, except retrenching decayed wood, or any croſs-placed or worn-out branch, and let all the others take their own natural growth.

*Protecting the bloſſom and young fruit.*—As Apricot-trees againſt walls bloſſom very early, both bloſſom and young fruit are very liable to injury from froſt and cutting blaſts; it is therefore adviſable to afford occaſional protection, in unfavourable ſeaſons, to ſome of the forwardeſt and moſt valuable kinds, either with mats, or twigs of evergreens ſtuck between the branches, beginning the covering as ſoon as the bloſſom begins to expand, and continue it till the fruit are fairly ſet; the mats to be uſed on nights and bad weather, but the evergreens to remain conſtantly till all danger is paſt, obſerving the ſame methods as directed for the peach and nectarines. See AMYGDALUS *Perſica.*

*Thinning the fruit.*—In ſome favourable ſeaſons theſe trees ſet many more fruit than can attain perfection; it is therefore proper to thin them when about the ſize of large cherries or a little bigger, which ſhould be done with great regularity, leaving the largeſt, faireſt, and beſt ſituated, to grow to maturity, as directed in thinning peaches.

Thoſe thinned off make moſt excellent tarts, and ſhould always be ſaved for that purpoſe.

### *Laurel Kinds.*

PRUNUS, *Lauro-ceraſus*, or Laurel-tree.

Under this head are ranged two beautiful evergreen trees for ornamental plantations, viz. Common Laurel, and Portugal Laurel.

The ſpecies are,

[1]PRUNUS *Lauro-ceraſus.*

*Lauro-ceraſus*, or *Cherry-bay*, or the *Common Laurel-tree.*] Grows twenty feet high or more; very branchy almoſt from the bottom, making ſtrong green ſhoots; large oblong, ſtiff, ſhining evergreen leaves, having two glands at the back, and cluſters of ſmall white flowers, ſucceeded by large oblong black berries, flowering in April, and the fruit ripens in September, or beginning of October, but is not good to eat.

*Varieties.*] Gold-ſtriped leaved—Silver-ſtriped leaved.

This ſpecies and varieties are ſome of the moſt beautiful evergreens in nature; are of a fine free growth; the leaves ſingularly large and elegant, remaining all the year.

It is a native of the Eaſt, about the Black Sea; but is very hardy, and thrives here in any ſituation.

[2]PRUNUS *Luſitanica.*

*Portugal Laurel.*] Grows twelve or fifteen feet high, forming a very branchy full head, having the young branches of a reddiſh colour; oblong-oval, thick, dark-green, glandulous evergreen leaves, and looſe bunches of ſmall white flowers, ſucceeded by roundiſh black berries; flowering in June, and the fruit ripens in autumn.

Both theſe ſpecies are noble evergreens; are commonly conſidered as ſhrubs, but are of the tree kind; the Common Laurel in particular, becomes a large tree in its native ſoil, and the ſouthern parts of Europe, where there are whole woods of it; both the ſpecies, however, thrive here, which, in many places are arrived to ſome conſiderable ſize, and are great ornaments to our ſhrub-

beries

berries and other plantations, appearing elegantly green and beautiful the year round.

They are hardy, and rarely injured by inclement weather, except in very ſevere winters, which ſometimes kills the young ſhoots and outer leaves.

They proſper in any common ſoil, and in any expoſure; the Common Laurel in in particular will grow almoſt any where, even under ſhady trees, or againſt fences.

Both the ſpecies are moſt excellent furniture for all ornamental plantations, in aſſemblage with the evergreen tribe in particular; and ſome diſpoſed towards the fronts of deciduous plantations have alſo a moſt beautiful effect. Clumps and plantations of the Common Laurel in lawns, parks, or any out grounds, are alſo very beautiful; and as it proſpers in almoſt any ſituation, and being a faſt grower, may be employed to conceal any diſagreeable fence or other unſightly object; in all of which ways they will appear moſt beautiful, at all ſeaſons, with their noble large evergreen foliage.

Hedges are alſo ſometimes formed of this tree for ornament; but where this is practiſed the hedge ſhould not be trimmed with garden-ſhears, which would mangle and ſpoil the beauty of their large leaves; therefore all neceſſary cutting ſhould be performed with a knife, in order to preſerve the leaves entire, and thus the hedge will make a very fine appearance.

It has been hinted by ſome that the leaves and fruit of theſe trees are of a noxious quality, but ſo far from being poiſonous, the the leaves of the Common Laurel are often uſed in the kitchen to put into cuſtards, &c. which gives them a moſt agreeable bitteriſh flavour; and the berries are often put into brandy.

The ſeaſon for planting theſe trees, may be any time in open weather, from October till March or beginning of April, though October and November is the moſt ſucceſsful ſeaſon.

### *Method of Propagation.*

The propagation of theſe beautiful trees is very eaſy, by ſeed and cuttings; but as cuttings is the moſt expeditious mode of propagation, they are moſt commonly raiſed by that method.

By Seed.—In autumn, when the ſeeds or berries are ripe, ſow them in beds of light earth, near an inch deep, and allow them ſome protection in ſevere froſts in winter, either by hooping and matting the bed, or covering it with any dry long litter, but let them remain uncovered all mild weather; with this care the plants will come up in the ſpring, giving occaſional waterings in dry weather, and in the autumn or ſpring following, when the ſeaſon is ſettled, plant them out in nurſery-rows to remain two or three years, or till wanted for any plantation.

By Cuttings.—This is a ſure and very expeditious method of raiſing theſe evergreens; the young ſhoots ſtrike freely, and ſoon commence proper plants. In Auguſt or September, in moiſt weather, procure a quantity of cuttings of the ſame year's ſhoots, cutting them off from about ten or twelve to eighteen inches long, with about an inch of the old wood to the bottom of each cutting if poſſible, though this is not abſolutely neceſſary: having procured the cuttings, ſtrip off the leaves from the lower part, and then plant them in a ſhady border in rows ſix inches aſunder, planting each cutting two thirds into the ground: give water in dry weather, and probably thoſe planted in Auguſt will be rooted the ſame year; they, however, will be all well rooted next ſummer and ſhoot at top, perhaps a foot long by the following autumn, at which time, or in the ſpring after, they may be tranſplanted in wide nurſery-rows, to acquire ſtrength for final tranſplantation.

In both the above methods of propagating theſe trees, they may be trained either buſhy, of a ſhrub-like growth, or trimmed up to a ſingle ſtem for ſtandards.

PSIDIUM, Guava-tree.

Two exotic trees of the Indies compoſe this genus, retained here in ſtoves for variety, garniſhed with oval and oblong leaves, and pentapetalous flowers.

Claſs and order, *Icoſandria Monogynia.*

*Characters.*] CALIX, is monophyllous, campanulate, and five-parted at top.—COROLLA, five oval, concave, patent petals.—STAMINA, twenty or more ſhort filaments, and ſmall antheræ.—PISTILLUM, a roundiſh germen under the calix, long ſtyle and ſimple ſtigma.—PERICARPIUM, a large oval baccaceous fruit, having numerous ſmall ſeeds.

The ſpecies are,

'PSIDIUM *Pyreferum.*

*Pear-fruited Pſidium*] Riſes with a woody thick trunk, branching twenty feet high, having

having quadrangular branches and a ſmooth bark, narrow, oval, obtuſe, oppoſite leaves, and the pedunculi having one flower, ſucceeded by an oblong pear-ſhaped fruit.

[2]PSIDIUM *Pomeferum.*

*Apple-fruited Pſidium.*] Grows twenty feet high; narrow, oblong, pointed leaves, and the pedunculi terminated by three flowers, ſucceeded by apple-ſhaped fruit.

Theſe plants muſt be kept in pots, and always placed in the ſtove.

They are propagated by ſeed obtained from the Weſt Indies; ſowed in pots and plunged in a bark-bed, and when the plants are come up three or four inches high, plant them in ſeparate pots, and treated as other exotics of the ſtove.

PSORALEA.

This genus furniſhes ſome ſhrubby exotics for the green-houſe collection, garniſhed with pinnated and trifoliate leaves, and papilionaceous flowers.

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX, is monophyllous and five-parted, having the lower ſegments twice the length of the others.—COROLLA, is papilionaceous and pentapetalous.—STAMINA, ten diadelphous filaments and roundiſh antheræ.—PISTILLUM, a linear germen, ſubulate, long, aſcending ſtyle, and obtuſe ſtigma.—PERICARPIUM, a compreſſed pod, having one kiney-ſhaped ſeed.

The moſt noted ſpecies are.

[1]PSORALEA *Pinnata.*

*Pinnated Pſoralea.*] Riſes with a woody ſoft ſtem, branching five or ſix feet high, pinnated leaves of three or four pair of narrow lobes, terminated by an odd one, and at the axillas cloſe-ſitting blue flowers with white keels. It is a native of Ethiopia.

[2]PSORALEA *Bituminoſa.*

*Bituminous trifoliate Pſoralea.*] Riſes with a ſhrubby ſtalk, branching ſparingly, about two or three feet high, ternate or three-lobed leaves of a bituminous ſcent; and blue flowers in cloſe heads.—Grows in Italy and in France.

[3]PSORALEA *Aculeata.*

*Aculeated or Prickly Pſoralea.*] Riſes with a ſhrubby branching ſtem three or four feet high, ternate leaves, having wedge-ſhaped lobes, terminating in a recurved ſharp point, and the branches terminated by roundiſh heads of blue flowers. Grows in Ethiopia.

Theſe plants flower here every ſummer; the firſt ſort greateſt part of that ſeaſon, and the others in July and Auguſt; all of which are ſucceeded by ſeeds in autumn.

Keep them in pots in order for removing into the green-houſe in winter.

They are propagated by ſeeds, ſowed in a hot-bed in the ſpring, and when the plants are two or three inches high, prick them in ſeparate ſmall pots, and gradually hardened to the open air, ſo as to bear it fully by the end of May or beginning of June.

They may alſo be propagated by cuttings any time in ſummer, planted in pots and plunged in a little heat, or covered cloſe with hand-glaſſes, ſhaded from the ſun and watered.

PTELEA, Shrub Trefoil.

The plants are of the ſhrub kind, conſiſting of two ſpecies only, one for the ſhrubbery the other for the ſtove, garniſhed with trifoliate and ſimple leaves, and tetrapetalous flowers in bunches.

Claſs and order, *Tetrandia Monogynia.*

*Characters.*] CALIX, is ſmall and cut into four parts.—COROLLA, four oval-lanceolate ſpreading petals.—STAMINA, four awl-ſhaped filaments, having roundiſh antheræ.—PISTILLUM, a roundiſh compreſſed germen, ſhort ſtyle, crowned by two obtuſe ſtigmas.—PERICARPIUM, a roundiſh bilocular membrane, having two ſeeds.

The ſpecies are,

[1]PTELEA *Trifoliata.*

*Trifoliate Ptelea,* or *Carolina Shrub Trefoil.*] Hath a ſhrubby upright ſtem, dividing into a branchy head eight or ten feet high, covered with a ſmooth purpliſh bark, trifoliate leaves formed of oval ſpear-ſhaped folioles, and the branches terminated by large bunches of greeniſh-white flowers, ſucceeded by roundiſh, bordered capſules.

[2]PTELEA *Viſcoſa.*

*Viſcous Indian Ptelea.*] Riſes with ſeveral ſtrong ſhrubby ſtems, branching erectly twelve or fifteen feet high, having a light brown bark; ſpear-ſhaped, ſtiff, ſimple leaves; and the branches terminated by cluſters of greeniſh flowers

The firſt ſpecies is a hardy deciduous ſhrub, and a proper plant for the ſhrubbery and other ornamental plantations to encreaſe the variety.

The ſecond ſort being of the temperature of ſtove exotics, muſt be kept moſtly in the hot-houſe, except about two or three months in the heat of ſummer, when they may be ſet in the open air.

The

The firſt ſort is propagated by ſeed, layers, and cuttings.

By Seed.—In March, or beginning of April, ſow the ſeed in a bed of light mould, half an inch deep; or to bring them as forward as poſſible, may ſow them in pots, and plunge them in a moderate hot-bed, juſt to bring up the plants an inch or two high: give occaſional waterings all ſummer, and protection from ſevere froſt in winter; and in ſpring following plant them out in nurſery-rows to acquire ſtrength for final tranſplantation.

By Layers.—Perform this in autumn; chuſe the young ſhoots, give them a ſmall ſlit underneath, then lay them in the earth, and they will be rooted in a year's time.

By Cuttings.—In the ſpring cut off a quantity of young ſhoots, plant them thick in pots, which plunge in any hot-bed, or in a bark-bed, juſt to ſtrike them; they will readily root, and be fit to tranſplant the following autumn.

The ſecond ſpecies is propagated commonly by ſeeds: ſow them in pots, and plunge them in a hot bed; when the plants are two or three inches high prick them in ſeparate pots, plunging them alſo in the hot-bed, or in the bark-bed of the ſtove.

PULMONARIA, Lung-wort.

The plants are hardy, herbaceous, fibrous-rooted perennials, medical and flowery plants, riſing with annual ſtalks, from about ten or twelve inches to a foot and half long, having oval and heart and ſpear-ſhaped leaves, and terminated by bunches of pentapetalous flowers.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX, is monophyllous, five-corned, quinquedented, and permanent.—COROLLA, is monopetalous funnel-ſhaped, with a cylindric tube, and the limb half cut into five obtuſe, erect, patent ſegments.—STAMINA, five ſhort filaments, having erect connivent antheræ.—PISTILLUM, four germens, one filiforme ſtyle, and obtuſe ſtigma.—PERICARPIUM, none; four roundiſh ſeeds lodged in the perſiſtent calix.

There are about ſix ſpecies, ſome are cultivated for medicine, others to encreaſe the variety of the herbaceous collection.

The moſt material ſpecies, are,

[1]PULMONARIA *Officinalis.*

*Common Officinal Spotted Lung-wort.*] Hath the root crowned with oval, heart-ſhaped, rough, white-ſpotted leaves, and upright ſtalks near a foot high, terminated by bunches of red, purple, and blue, flowers.

It is cultivated both for medicine and for variety in the garden:—is good for diſorders of the lungs, coughs, and conſumptions.

[2]PULMONARIA *Anguſtifolia.*

*Narrow-leaved Lung-wort.*] Hath narrow, ſpear-ſhaped, hairy, radical leaves; upright ſtalks about a foot high, terminated by bunches of flowers, becoming of a fine blue colour.

[3]PULMONARIA *Virginica.*

*Virginian Lung-wort.*] Riſes with upright ſtalks about a foot and half high; ſpear-ſhaped, obtuſe, ſmooth leaves; and the ſtalks terminated by cluſters of blue flowers.

*Varieties.*] With red flowers,—purple-flowered—white-flowered.

All theſe ſpecies flower in April and May, and the ſeeds ripen in June and July.

They are all perennial in root, which is of the fibrous kind; but they are annual in ſtalk, riſing in the ſpring, and after having flowered and perfected ſeed they decay: they are very hardy plants and will grow almoſt any where, but delight moſt in ſomewhat ſhady ſituations.

They are propagated by ſeeds and by parting the roots.

By ſeeds.—Sow them in the ſpring in any bed or border of common earth, and rake them in, they will ſoon come up, and in July or Auguſt put out the plants either where they are to remain or in nurſery beds till October, then tranſplanted finally.

By parting the roots.—Autumn, about Auguſt or September, is the proper time; but the ſooner after they have done flowering the better; do not divide them too ſmall, and plant the ſlips directly, and they will flower ſtrong the following ſpring.

PUNICA, Pomegranate tree.

Two ſpecies, of the tree and ſhrub kind, form this genus, one a hardy fruit tree, the other a ſomewhat tender ſhrub, both of them cultivated chiefly for variety; are adorned with ſpear-ſhaped and linear leaves, and pentapetalous fine red flowers.

Claſs and order, *Icoſandria Monogynia.*

*Characters.*] CALIX, is monophyllous, bell-ſhaped, quenquedented at top, coloured, and permanent.—COROLLA, five roundiſh erect ſpreading petals, inſerted into the calix.—STAMINA, twenty or more ſhort filaments having oblong antheræ.—PISTILLUM, a germen under the receptacle, ſingle ſtyle,

and a capitated ſtigma.—PERICARPIUM, a large, roundiſh, apple-ſhaped fruit, having nine cells filled with roundiſh ſucculent ſeeds.

One of the ſpecies *Common Pomegranate-tree*, produces a very large eatable fruit called a Pomegranate, though they ſeldom attain true perfection in this country.

The ſpecies are,

¹PUNICA *Granatum.*

*Granatum, or Common Pomegranate-tree.*] Riſes with a tree ſtem, branching numerouſly all the way from the bottom, growing eighteen or twenty feet high; ſpear-ſhaped, narrow oppoſite leaves; and the branches terminated by large moſt beautiful red flowers, ſucceeded by large roundiſh fruit, as big as an orange, having a hard rind filled with ſoft pulp and numerous ſeeds.

*Varieties.*] Large double-flowered, remarkably beautiful,—ſtriped-flowered.

Theſe trees are deciduous, grow naturally in Italy, Spain, and Portugal, where they ripen fruit abundantly; in this country, however, they require a warm ſituation, and if trained againſt a ſouth wall they will ſometimes produce full-ſized fruit, though it rarely ripens with any tolerable flavour; but as both the flowers and fruit make a fine appearance, a few of the trees merit culture in every good garden.

They all flower abundantly, in July, Auguſt, and September, and the fruit ripens in autumn.

²PUNICA *Nana.*

*Dwarf American Pomegranate* ] Riſes with a ſhrubby ſtem, branching four or five feet high, narrow ſhort leaves, and ſmall red flowers, ſucceeded by ſmall fruit; begins flowering in July and continues till October.

The firſt of theſe ſpecies is a hardy tree, and may be planted for ornament in ſhrubberies and other plantations for the beauty of their flowers; but it is adviſable to plant ſome alſo againſt a warm wall and train them like other wall-trees, they will generally flower more abundantly, and have a chance to ripen fruit; it ſhould be obſerved as they produce their flowers always on the young ſhoots of the year, ariſing principally from thoſe of the year before, that it is therefore proper to train in plenty of the ſtrongeſt beſt placed ſhoots of each year, which in winter ſhould be ſhortened to promote their furniſhing a greater ſupply of young wood in ſummer for flowering; and let them be trained to the wall at equal diſtances, and managed nearly as directed for peaches and nectarines, &c.

The double-flowered variety produces much larger and more beautiful flowers than the others, it is therefore in greateſt eſtimation to cultivate for ornament.

The ſecond ſort being rather tender it is proper to plant it moſtly in pots, in order to have ſhelter of a green-houſe in winter.

Both the ſpecies and varieties are propagated abundantly by layers; autumn is the proper ſeaſon, chuſing the young branches: give a little ſlit at a bud or eye and lay them in the uſual way, giving occaſional waterings in ſummer, and by next autumn they will be well rooted and fit to tranſplant in nurſery rows for two or three years, to get ſtrength, and then planted where they are to remain.

Thoſe of the common ſort and varieties may be trained as ſtandards, either as half or full ſtandards, or as dwarfs.

But thoſe deſigned for walls muſt be managed accordingly, as directed for peaches, &c. as aforeſaid.

PYRUS Pear-tree, comprehending alſo the Apple-tree and Quince-tree.

The Pear, Apple, and Quince, were long conſidered as ſo many diſtinct *genera*, but the botaniſts having diſcovered their *characters* to be alike, have ranged them all as ſpecies of the ſame *genus*; and as ſuch we will alſo conſider them and arrange them accordingly: they are all of the tree kind, adorned with oblong and oval leaves and pentapetalous icoſandrous flowers.

Claſs and order, *Icoſandria Pentagynia.*

*Characters.*] CALIX, is monophyllous, concave, divided into five ſpreading ſegments and permanent.—COROLLA, five large concave petals, inſerted into the calix.—STAMINA, twenty, or more, ſhort awl ſhaped filaments, having ſimple antheræ —PISTILLUM, a germen ſituated under the calix, ſupporting five ſtyles, having ſimple ſtigmas. ——PERICARPIUM, a roundiſh umbilicated fruit with five membranaceous cells, each having one oblong ſmooth ſeed or kernel.

Agreeable to the above *characters* the *Malus*, Apple-tree, and *Cydonia*, the Quince-tree, formerly conſidered as diſtinct *genera*, are by Linnæus retained as ſpecies only of *Pyrus*: they are certainly all of the ſame family, for beſides their agreement in *characters*, all the three ſorts will readily take by graſting and budding upon one another; however, as the

the Pear, Apple, and Quince, have always been conſidered as different ſorts of fruit, each ſort being of a peculiar ſhape and property, and each comprehending many varieties, we will arrange each ſpecies and its varieties under a ſeparate head, viz. Pear Kinds, ——Apple Kinds,——and Quince Kinds, all under the generic name *Pyrus*.

### *Pear Kinds.*

1 *Pyrus Communis.*

*Common Pear tree.*] Riſes with an upright large trunk branching thirty or forty feet high, in ſome widely around, others more erectly, often forming a conical head; oval, lanceolate, ſerrated leaves, and corymbous cluſters of white flowers from the ſides of the branches, ſucceeded by large fruit extended at the baſe; of different properties in the numerous varieties.

The botanic deſcription is——Pyrus with ſerrated leaves and flowers in a corymbus.

*Varieties.*] There is only one ſpecies of this tree, but it comprehends almoſt endleſs varieties, all of which bearing the above deſcription, and all bear their flowers and fruit upon ſpurs, ariſing from the ſides of the branches, of from two or three to many years old, the ſame branches and ſpurs continuing fruitful a great number of years; the different varieties furniſhing fruit for uſe from the beginning of July until May or June next year, which, according to their times of ripening may be divided into three claſſes; Summer Pears, Autumn Pears, and Winter Pears; the Summer Pears ripening in different ſorts from the beginning of July until the middle or end of September, and are generally fit to eat from the tree, or at leaſt, do not keep above a week or two before they rot. And the Autumn Pears attain perfection in October, November, and December; ſome of which ripen nearly on the tree in October and beginning of November, others require to lie ſome time in the fruitery, and ſome will keep two months: but all the Winter Pears, although they attain to their full growth on the tree by the end of October and in November, yet they do not acquire perfection for eating till from the end of November till April and May; thoſe of each claſs having different properties, ſome being melting, others breaking, ſome mealy, and ſome are hard and auſtere and can be uſed only for kitchen uſes; but our liſt conſiſts moſtly of eating Pears, with a few of the choiceſt hard Pears for baking; though any of the large eating Peers may alſo be uſed occaſionally for culinary purpoſes, before they are quite ripe.

As many of the fine ſorts were firſt obtained from France they are ſtill continued in moſt catalogues by the French names; obſerving that the varieties of the fruit are very numerous, we ſhall only give a liſt of the moſt valuable, arranged in three claſſes.—— Summer Pears.—Autumn Pears,—Winter Pears.

### *Summer Pears.*

Summer Pears are ſuch as ripen from the beginning or middle of July until the middle or latter end of September, and continue but a ſhort time in perfection: ſome of the earlieſt ſorts keep good only a few days before they become mealy and rotten; and very few of the ſorts will laſt much above a fortnight; but by having different varieties the ſucceſſion may be continued two months or ten weeks till ſucceeded by the autumnal ſorts, which will continue in eating from the end of September till Chriſtmas.

*Little Muſk Pear.*] A ſmall roundiſh yellow Pear of a muſky flavour, valuable for its early perfection: ripe beginning or middle of July.

*Green Chiſſel Pear.*] A ſmalliſh nearly oblong, light-green, Pear, melting very juicy and agreeably flavoured: ripe middle or end of July.

*Red Muſcadelle, or Faireſt Supreme.*] A middle-ſized, beautiful, red-ſtriped and yellow Pear, ſomewhat firm, breaking juicy and rich flavoured; ripe the end of July and beginning of Auguſt.

*Jargonelle Pear, commonly ſo called, but is properly Cuiſſe Madam, or Lady's thigh.*] A largiſh, long, pyramidal, ruſſety green Pear, tinged with brown next the ſun, having a fine, breaking, juicy pulp, of a moſt delicious rich flavour; is the beſt ſummer Pear in the world, and the tree a good bearer, both in ſtandards, eſpaliers, and againſt walls: ripe beginning or middle of Auguſt.

*Cuiſſe Madam Pear, commonly ſo called, but is properly the Jargonelle.*] A fine large oblong, ſmooth, yellowiſh green Pear, ſometimes reddened next the ſun, having a firm pulp tolerably juicy and agreeably reliſhed, though not high flavoured, and is apt to become mealy when full ripe; but being a large handſome fruit, and the tree a remarkable

good bearer; it highly merits culture, particularly for the ſupply of markets; and for which purpoſe it is greatly cultivated about London: ripe towards the middle of Auguſt.

*Windſor Pear.*] A large oblongiſh Pear, ſwelling conſiderably towards the crown, of a greeniſh-yellow colour, having a ſoftiſh pulp, but ſoon becomes mealy: ripe middle or end of Auguſt.

This ſort and the former bear a great reſemblance to each other, but this is rather ſhorter and more ſwelling towards the crown.

*Great Blanquette Pear.*] A large roundiſh, yellowiſh-green, ſmooth Pear, having a ſoft juicy fleſh of a rich flavour: ripe beginning or middle of Auguſt.

*Little Blanquette Pear.*] A ſmall, roundiſh, ſmooth, yellowiſh-green Pear: ripe middle or end of Auguſt.

*Early Ruſſelet Pear.*] A middle-ſized, oblong, reddiſh Pear, melting and replete with ſugary juice: ripe about the middle of Auguſt.

*Muſk Robine, or Queen's Pear.*] A ſmall, roundiſh, top-ſhaped, yellowiſh-coloured Pear, tender, ſweet, and muſky: ripe middle or end of Auguſt.

*Red Orange Pear.*] A middle-ſized globular Pear, reddened on the ſunny ſide, the other green, melting and richly flavoured: ripe end of Auguſt.

*Perfumed Pear.*] A middling, roundiſh, deep-red Pear, ſpotted with brown, having a melting perfumed fleſh: ripe end of Auguſt.

*Orange Muſk Pear.*] A large, round, yellow Pear, very good if eaten from the tree, as ſoon as a little ripe: it ripens in the end of Auguſt.

*Auguſt Muſcat, or Royal Pear.*] A largiſh, globular, whitiſh-yellow Pear, breaking ſugary and perfumed, and one of the fineſt Pears of the ſeaſon: ripe end of Auguſt.

*Onion Pear.*] A middle-ſized, globular, brown-ſkinned, Pear: ripe end of Auguſt.

*Salviati Pear.*] A largiſh, globular, flatted Pear, reddiſh and yellow to the ſun, and whitiſh on the other ſide, tender and agreeably flavoured: ripe beginning of September.

*Red Admirable Pear.*] A large globular Pear, crimſon-coloured on the ſunny-ſide: ripe in September.

*Summer Bon Chretien, or Good Chriſtian.*] A fine, large, oblong Pear, beautifully reddened next the ſun, and whitiſh on the other ſide, breaking and highly flavoured: ripe beginning of September.

*Roſe Water Pear.*] A middle-ſized, globular, browniſh-red, rough Pear, breaking and finely flavoured: ripe middle of September.

*Summer Bergamot Pear.*] A largiſh, round-flatted, greeniſh-yellow Pear, melting and ſugary: ripe middle of September.

*Varieties.*] There are two or three varieties of this ſort that differ in ſize, but are all of the Bergamot ſhape.

*Orange Bergamot Pear.*] A largiſh, round-flatted, yellow Pear, reddiſh next the ſun, breaking and replete with perfumed juice: ripe towards the end of September.

Other Summer Pears of leſs note are known by the following names;—Catharine Pear,—St. James's Pear,—Crawford Pear,—Citron Pear,—Pear Piper,—Brute Pear,—Muſk-drone Pear—Lemon Pear,—Green Muſk Pear,——Long-ſtalked Blanquette Pear.

All the kinds of Summer Pears ripen on the trees fit for eating, but ſhould be gathered before they are too ripe.

### *Autumnal Pears.*

Autumn Pears are ſuch that attain their full growth on the trees from about the middle or end of September till the end of October; and which after being gathered gradually mellow and improve in flavour, and will keep ſome a month, others ſix weeks, and ſome two months or longer; being in eating principally in October, November, and December.

*Autumn Bergamot Pear.*] A middle-ſized, roundiſh, flatted, yellowiſh green Pear, faintly reddening next the ſun, melting and of a richly perfumed flavour: ripe end of September or beginning of October, continuing good until the end of November.

*Swiſs Bergamot Pear.*] A middle-ſized, roundiſh, greeniſh Pear, finely ſtriped with red, melting and tolerably well flavoured: ripe end of September continuing in eating till November.

*Great Ruſſelet Pear.*] A large oblong brown and reddiſh Pear, ſometimes ſpotted, having a tender rich pulp: ripe middle or end of September.

*Brown Beurre, or Beurre de Roy Pear.*] A fine, large, oblong, ruſſetty, brown and greeniſh Pear, very melting, juicy and ſugary, and is one of the fineſt Pears of the autumn: ripe beginning of October and keeps good till December.

*White*

*White Beurre Pear.*] A large, roundiſh, top-ſhaped, whitiſh-yellow Pear, melting, very juicy and good: ripe beginning of October and keeps till November.

*Red Beurre Pear.*] A large, oblong, reddiſh Pear, melting and very fine: ripe beginning of October.

*Green Sugar Pear.*] A middle-ſized, top-ſhaped, ſmooth, green Pear, full of a rich ſugary juice: ripe end of October, and keeps good all November.

*Monſieur John Pear.*] A largiſh, nearly round, ſwelling, brown Pear, with a rough ſkin, having a breaking delicious pulp: ripe end of October, continuing in perfection all November and part of December.

*Creſane Pear.*] A large, ſomewhat globular, flatted, greeniſh-yellow, ruſſety Pear, hollowed at the top, is remarkably tender and ſweet, and may be ranked as the fineſt Pear of the ſeaſon: ripe end of October, keeping good till December.

*Swann's-egg Pear.*] A moderately large, egg-ſhaped, duſky-green Pear, browniſh next the ſun, is very juicy and agreeably flavoured: ripe end of October, continuing in tolerable perfection till near Chriſtmas.

*Verte Longue, Long Green Pear, or Autumn Mouth-water.*] A large, long, very green Pear, is melting and juicy: ripe in October, and continues till December.

*Marquis's Pear.*] A fine large, ſwelling, flat-topped, greeniſh-yellow Pear, faintly ſpotted with red, having a tender good pulp; is in eating in November and December.

*Grey Good-wife Pear.*] A middle-ſized, roundiſh, browniſh-red Pear, moderately tender and well flavoured; is in eating from the end of October till December.

*Rouſſeline Pear, or Long-ſtalked, late Autumnal Muſcat.*] A large, oblong, long-ſtalked Pear, reddiſh on the ſunny ſide, is tender and of a muſky flavour: in eating in the end of October and part of November.

*Muſcat Fleury Pear.*] A ſmalliſh globular, browniſh-red, long-ſtalked Pear, tender and high flavoured: in eating from October till December.

*Twice flowering Pear-tree.*] It often produces bloſſom twice a year, the firſt in the ſpring, and the ſecond in autumn, ſo is preſerved in many gardens as a curioſity.

Other leſs material autumnal Pears are—Beſideri Pear.—Dean's Pear.—Vicar's Pear.—Vine Pear.—Autumn Roſe Pear.—French Bergamot.—Beurre Bergamot.—Knave's Pear.—Burnt Cat Pear.—Pound Pear, very large.

All the autumn Pears ſhould have their full growth on the tree, but not hang till quite ripe, which is the end of September and in October, being their ſeaſon of full growth.

### *Winter Pears.*

Winter Pears arrive to full growth about the end of October and in November, but do not attain maturity for eating until they have lain ſome conſiderable time in the houſe, ſome a month or ſix weeks, others two or three months or more, before they ripen, as obſerved below in their deſcriptions, ſo that they ſucceed one another in perfection generally from about December until May.

By the Winter Pears being ſo long acquiring perfection after gathered from the tree, many perſons have thought them fit only for culinary uſes; but moſt of the following liſt are very fine eating Pears, after having lain the proper time to mellow.

*St. Germain Pear.*] A large long yellowiſh-green, extraordinary fine Pear, of the melting ſugary kind: in eating from December until February.

*Chaumontelle Pear.*] A large oblong Pear, having one ſide purpliſh the other of a whitiſh-green colour, is melting, of a very rich delicious flavour: in eating from December until March or April.

*Martin Sec, or Dry Martin Pear.*] A large, oblong, ruſſety-reddiſh Pear, is breaking, ſomewhat dry, but of a fine perfumed flavour: in eating end of November, December and January.

*Colmar Pear.*] A large ſwelling, flat-topped, greeniſh-yellow Pear, ſpotted with yellow; is tender and exceedingly fine flavoured: in eating from December till January or February.

*Spaniſh Bon Chretien.*] A large pyramidal purple and yellow Pear, having many dark ſpots on the purple ſide; is a fine Winter Pear, ready for eating the end of December, continues good near two months.

*Virgoleuſe Pear.*] A large, oblong, greeniſh-yellow Pear, ſometimes browniſh next the ſun, is an excellent fruit: in eating from the beginning or middle of December until the end of January.

*Dauphine Pear.*] A middle-ſized, roundiſh, top-ſhaped, ſmooth, yellowiſh-green Pear, having a melting, ſugary, muſky pulp: in eating the end of November, continuing in perfection all December and moſt part of January.

*Winter*

*Winter Verte Longue Pear.*] A longiſh, green-coloured, ſmooth, ſpotted, exceeding good Pear; in eating the end of December and January, &c.

*Winter Beurre Pear.*] A ſmalliſh, oblong, yellowiſh, red-ſpotted, very fine Pear; ready for eating in December and January.

*Winter Thorn Pear.*] A large, long, pyramidal whitiſh-green Pear; is melting, and in fine eating from December till February.

*Martin Sire, or Lord Martin Pear.*] A large, roundiſh, irregularly-ſwelling, ſmooth Pear, red on one ſide, the other yellow; is breaking and of a perfumed flavour: in eating in December and January.

*Winter Bergamot Pear.*] A middle-ſized, roundiſh, greeniſh-yellow Pear: in eating from the end of November until the ſpring.

*Holland's Bergamot.*] A large, round, greeniſh Pear, having a tender rich pulp: in eating from January till April.

*Winter Bon Chretien.*] A very large, long pyramidal, yellowiſh-green Pear, having often an uneven ſurface; is breaking, very juicy, remarkably ſweet and rich flavoured, and often proves the beſt Winter Pear in the collection: in eating from February till April or May.

*German Muſcat Pear.*] A middle-ſized, oblong, ruſſety-red Pear, having a melting rich pulp: in eating from February till May or longer.

*Eaſter Bergamot Pear.*] A large, roundiſh, flat-topped, greeniſh Pear, having many rough ſpots is of the breaking kind; and is in eating from February till April or May.

*Winter Ruſſelet Pear.*] A middle-ſized, longiſh Pear, red on one ſide, the other of a greeniſh-yellow, is melting and agreeably reliſhed: in eating in January, March, &c.

*St. Martial Pear.*] A longiſh, oblong, ſmooth Pear, one ſide purple the other yellow; having a buttery rich fleſh: in eating from February till May or June.

*Cadillac Pear.*] A very large, roundiſh, red and yellow Pear, having a hard, ſour pulp, but is excellent for baking and other culinary purpoſes: in uſe from November or December till May.

*Union Pear, or Uvedale's St. Germain.*] A large, long, deep-green Pear, reddiſh on one ſide, having a hard, ſour, pulp, but is excellent for baking, &c. in perfection from November or December till May or longer.

*Black Pear of Worceſter, or Parkinſon's Warden.*] A remarkably large, oblong, duſky brown, rough Pear, having a hard auſtere pulp, but is very fine for culinary uſes, from November till March or April.

*Double Flowered Pear.*] The tree produces double flowers ſucceeded by a large, ſhort, yellowiſh and red Pear, rather hard and auſtere; but is remarkably fine for baking, &c.

Other leſs material varieties of Winter Pears are known by the following names.—*Good Lewis*, a large longiſh Pear.—*Ambrette*, a large roundiſh Pear.—*Thick-ſtalked Pear*, a very large roundiſh fruit.—*Amadot*, a middle-ſized oblong Pear.—*St. Auſtin*, a middling oblong Pear.——*Ruſſet of Anjou*, a large roundiſh Pear.—*Chaſſery*, a large oblong Pear.—*Iron-coloured Pear*, a middle-ſized oblong fruit.—*Golden Winter Pear*, a large globular fruit.—*Villain of Anjou*, a large roundiſh Pear.——*Winter Ruſſelet*, a middle-ſized longiſh Pear—*Carmelite*, a middling roundiſh Pear for kitchen uſes.——*Winter Citron-ſhaped Pear*, for baking—*Blood Pear*, for baking, &c.—*Engliſh Warden*, a large Pear for baking and other culinary uſes.

There are many other varieties of Pears of leſs account, both of Summer, Autumn, and Winter kinds, that are unneceſſary to inſert here; and indeed it would be almoſt impoſſible to diſcriminate the various ſorts of hard Pears, and others of little note, found in the orchards and gardens in country villages, and about farm-houſes, in different parts of England, &c.

But as the varieties deſcribed in the above three liſts having known merit, and are cultivated in moſt of the nurſeries for ſale, by the names here prefixed to each kind, conſiſting of near ſixty different ſorts, are more than ſufficient to furniſh the moſt extenſive garden with a copious variety of Pears almoſt the year round.

All the varieties of this tree are hardy and will ſucceed in any common ſoil of a garden or orchard, both as dwarfs for walls and eſpaliers, &c. and in ſtandards of all ſorts; and in all of which modes of training they will bear plentifully: it is however of importance to allot a good wall and eſpalier for ſome of the choicer kinds, both Summer, Autumnal, and Winter Pears, in order both to forward the growth of the fruit and to improve its ſize, beauty and flavour: a ſouth, eaſt, and weſterly wall are the proper expoſures, and it is eligible to plant ſome in each of thoſe aſpects, to vary the times of ripening, though moſt of the Summer Pears will ſucceed very well in almoſt any aſpect, and

if ſome are planted alſo againſt a north-wall they will ripen later and continue the ſucceſſion of any approved ſorts longer in eating; but it is particularly neceſſary to allow all the fine ſorts of Winter Pears an eaſt or weſt wall, or a well expoſed eſpalier, otherwiſe they will not perfect their fruit kindly in unfavourable ſeaſons; in eſpaliers however that are well trained, all the ſorts of Pears attain great perfection, and the eſpaliers may be arranged round the quarters of the kitchen-garden, or in any other free ſituation where the ſoil is of ſimilar quality. See ESPALIERS.

Remarking, that theſe trees, both againſt walls and eſpaliers, ſhould generally be allowed a great deal of room to ſpread, for by having full ſcope they will extend their branches more than twenty feet on each ſide of the ſtem, and the whole will ſometimes form a ſpread of forty or fifty feet, with height in proportion.

Standards of ſome ſorts of Pears are alſo naturally of a very ſpreading growth, others grow more upright.

However in all the methods of training theſe trees it is highly requiſite to allow them ſufficient room to ſpread to their full extent, and their branches ſuffered to extend themſelves always at full length; for Pear-trees ſhould never be ſhortened, except in the firſt or ſecond year, &c. to obtain a ſupply of lateral branches to form a more regular ſpreading head, as hereafter elucidated, becauſe as they always bear their bloſſom and fruit upon ſhort ſpurs ariſing from the ſides of the branches; firſt, however, towards the extreme parts, then by degrees all along the ſides almoſt from every eye, that ſhortening would cut away the firſt fruitful parts, and thus by ſtopping their progreſs of ſhooting in length it would force out ſtrong ſhoots from all the eyes, and prevent their forming ſpurs or fruit-buds; but being trained at full length they ſhoot moderately, and in two or three years naturally form ſhort ſpurs of from about half an inch to an inch or two long, the ſame branch and ſpurs continuing fruitful a great number of years.

But it muſt be obſerved, that Pear-trees are generally ſeveral years, before they attain any tolerable bearing ſtate, for the branches ſeldom begin to form fruit-ſpurs till they are from about two or three, to four or five years old; at that age, however, they ſometimes begin to bear, but never any general crop till they are eight or ten years old.

*Method of Propagation, and general Culture in the Nurſery.*

Pear-trees are propagated by grafting and budding upon any kinds of Pear-ſtocks; alſo occaſionally upon Quince-ſtocks, and ſometimes upon white-thorn ſtocks, but Pear-ſtocks are greatly preferable to all others for general uſe.

The numerous varieties of Pears having been firſt accidently obtained from ſeed, and as ſeedlings of theſe varieties rarely produce the ſame ſorts again; the approved kinds are continued and encreaſed only by grafting or budding upon ſtocks raiſed from the kernels of any kind of Pears, as above ſaid, or occaſionally upon Quince-ſtocks, eſpecially for dwarfs of any ſort, as the Quince being a moderate ſhooter, they moderate the growth of the trees grafted or budded thereon, ſo as to be more eaſily kept within a ſmaller compaſs; and for the ſame reaſon, white thorn ſtocks have been uſed; but theſe being apt to render the fruit drier and ſtony at the core, are almoſt totally diſuſed in the nurſeries; and trees upon Quince ſtocks being of ſhorter duration than upon Pears, they are not now in much repute, ſo that Pear-ſtocks are the beſt of all for general uſe, both for dwarfs and ſtandards: obſerve therefore the method of raiſing Pear-ſtocks is from the kernels of any ſorts of Summer or Autumnal Pears; ſowing them the end of autumn or early part of winter in beds of light earth covering them near an inch deep; they will come up in the ſpring, and in autumn, winter, or ſpring, following, plant out a parcel of the ſtrongeſt in nurſery-rows to remain for grafting and budding, which after having from one to two or three years growth here, or when about half an inch thick, or a little more or leſs, they will be of proper ſize to receive the grafts and buds.

The grafting and budding them is to be performed in the uſual method, performing the grafting in the ſpring and the budding in ſummer: See GRAFTING and INOCULATION: being particularly careful to procure the grafts and buds from ſuch trees as produce the fineſt fruit of the reſpective ſorts you intend propagating.

Being however provided with the grafts and buds, proceed to graft them, &c accordingly for dwarfs and ſtandards; obſerving, that thoſe deſigned as dwarfs for walls, eſpaliers, or ſtandard-dwarfs, be grafted or budded

budded near the bottom; and for half and full ſtandards, the ſtocks may either be previouſly trained up from three or four to ſeven or eight feet high to form a ſtem, then grafted near the top, or may be grafted low in the ſtock, like the dwarfs, and train the firſt main ſhoot for a ſtem the above height; all the grafted trees both dwarfs and ſtandards will ſhoot the ſame year, but the budded ones not till the ſpring after; and when their heads are a year old from the grafting and budding they may if thought proper be planted out for good, or remain longer in the nurſery as may be convenient.

Obſerve however, that the dwarfs deſigned for walls, eſpaliers, &c. whether they remain longer in the nurſery or are tranſplanted at a year old into the garden, ſhould have the firſt ſhoots from the graft or bud when a year old, headed down in March to five or ſix eyes to force out a proper ſupply of four, ſix, or more lateral branches, near the ground to furniſh the wall and eſpalier with bearers quite from the bottom, and theſe will readily produce others to cover the upper part.

But ſtandards, ſuppoſing them to be grafted on high ſtocks, may either be headed near the top of the ſtock, or permitted to run up, as the caſe may require, that if ſhortened it will force out laterals near the head of the ſtem, and form a more ſpreading full head; and if ſuffered to run up with the firſt ſhoots entire, they will form higher, and generally handſomer heads in the end; ſuch ſtandards however that are grafted or budded as low in the ſtock as for dwarfs, muſt have the firſt ſhoot trained upright at full length ſix or ſeven feet high for a ſtem, if for full ſtandards, then may either top it at ſix feet height, to force out laterals near that part to form a ſpreading head as aforeſaid, or ſuffer it to run and branch in its own way to form a more erect and higher head.

All the headed trees however, both dwarfs and ſtandards, that being cut down in the ſpring, will ſoon branch out from all the eyes immediately below; being careful during the ſummer to trim off all ſhoots from the ſtem, and ſuffer all the top ſhoots to remain entire, and they will form handſome heads by the end of ſummer: and in autumn, winter, or ſpring, following, they may have their final tranſplantation into the garden, &c. provided it was not done before heading down.

But if obliged to retain them longer in the nurſery, let the whole be trained agreeable to the form they are deſigned to aſſume, whether dwarfs for walls and eſpaliers, dwarf-ſtandards, or half or full ſtandards, ſuffering the whole to branch away at full length, not ſhortening any after the above general heading down when a year old, except it ſhall ſeem abſolutely neceſſary to procure a more ſufficient ſupply of lower branches, after which however, no further general ſhortening ſhould be practiſed to theſe ſort of trees, for after having obtained a proper ſet of regular branches near the head of the ſtem, they will readily furniſh more in their turn to encreaſe the head upwards.

*Their Tranſplantation into the Garden, &c*

When the trees however are from one or two to four or five years old, from the graft or bud they are of a proper growth for planting out finally; but if larger trees are required, thoſe of ſix or eight years old may be ſafely tranſplanted; younger trees, however, always ſucceed the beſt, even if only two or three years old.

The ſeaſon for planting them may be any time in open weather from the end of October till March; but if in autumn, or early in winter it will be an advantage.

They will ſucceed in any common ſoil of a garden, or any good fertile orchard-ground, or field, that is not copiouſly wet, or very ſtiff or ſtubborn, but moderately light and pliable, one good ſpade, at leaſt, if more the better; preparing the ground by proper trenching one or two ſpades deep, as the depth of good ſoil admits; and to dig capacious holes for each tree at eligible diſtances.

*Firſt of Planting the Dwarfs and their general Culture.*

The diſtance to plant Dwarf-Pears for walls and eſpaliers is not leſs than twenty feet, but if twenty-five or thirty, or more the better, eſpecially if lowiſh walls, &c. that in default of height, there may be full ſcope to extend their branches conſiderably in a horizontal direction, as they will effectually fill that ſpace, or even much more if allowed it them; but the above diſtance of thirty or forty feet appearing very conſiderable at firſt, and the trees ſtanding ſo wide having a ſtraggling appearance for ſeveral years before they approach one another to effect any uniformity, they are rarely planted at that diſtance, ſome ſcarcely half ſo much, but ſeldom more

than

than twenty or twenty-five feet; however, it is of importance to grant theſe trees ſufficient room; and the higher the walls the better, which is of particular advantage to Pears, evident by thoſe growing againſt the ends of high buildings, as they extend themſelves very conſiderably every way, as before obſerved, and their branches requiring to be trained conſtantly at full length, in which they will emit fruit-ſpurs all the way along their ſides; therefore they may be planted at leaſt from twenty-five to thirty feet diſtance, and in each interval may plant a cherry, or any other moderate-ſhooting fruit-tree, to fill the vacancy, and bear a few years, till the Pears advance in growth; and according as theſe approach one another, cut the others away by degrees, ſo as at laſt the Pears may occupy the whole ſpace. Having however fixed on the diſtance, and the holes dug, and the trees ready, let them be planted in the uſual way, and all with their heads entire, at leaſt for the preſent. See PLANTING.

The trees being thus planted, their general management, with regard to training and pruning, is nearly as follows.

Obſerve, in the firſt place, that if the young trees thus planted are only one year old from the graft or bud, having their firſt ſhoots of a year-old entire, theſe ſhould in the ſpring be headed down to five or ſix inches, as directed in their nurſery culture, to force out lower horizontals; but if they were previouſly headed in the nurſery, as we adviſed, and having thereby thrown out laterals to form a regular ſet of horizontals, conſiſting of ſix or more regular branches near the bottom, they ſhould not now be ſhortened, but trained to the wall or eſpalier at full length horizontally, preſerving an equal number on each ſide five or ſix inches aſunder, they will readily emit a further ſupply of horizontals to cover the wall, &c. regularly upward, and at the ſame time as being not ſhortened, they will gradually form themſelves for bearing, as every ſhortening of the branches of theſe trees retards their bearing a year at leaſt; if however there is a want of branches, ſome of the middlemoſt may be pruned ſhort, and trained upright. According as the trees ſhoot in ſummer, train in a farther ſupply of all the regular ſhoots in every part where they occur, at full length, unleſs it ſhall ſeem neceſſary to pinch ſome ſtrong ſhoots to obtain a greater ſupply of horizontals the ſame year, in order to furniſh the head as ſoon as poſſible: at this time however, diſplace all fore-right and other irregular growths of the year, continuing the ſupply of regular ſhoots cloſe to the wall, as they advance in length during their ſummer's growth. And in the winter pruning, examine the ſupply of ſhoots retained in ſummer, ſelecting all thoſe that are well-placed and properly ſituated for training in, to increaſe the number of horizontals regularly on each ſide, which leave wholly entire, and at the ſame time retrench any ſuperfluities and ill-placed ſhoots omitted in ſummer; then let the whole ſupply of regular horizontals in every part be trained in ſtraight and cloſe to the wall and eſpalier, horizontally and equally on both ſides of the tree, every branch at full length, five or ſix inches aſunder, as aforeſaid. See WALL and ESPALIER TREES, PRUNING, &c.

Another method ſometimes practiſed in training theſe trees for walls and eſpaliers is, that after their firſt heading down, and having thrown out ſeveral laterals, ſelect three of the ſtrongeſt and moſt regular-placed of them, one on each ſide and one in the middle, nail the two ſide ones horizontally at full length, and the middle one upright; next year the tree having produced a further ſupply of ſhoots, add two or four of them as ſide-horizontals, arranging them on each ſide of the ſtem as the two former, training the middle ſhoot ſtill in an upright direction; obſerving, however, if it ſhould not furniſh horizontals low enough, it may be ſhortened ſo as to make it throw out ſhoots at any requiſite height, continuing the middle one always upward for a ſtem, and the ſide ones horizontally for bearers.

By either of the above methods of training theſe trees, continue every year increaſing the number of horizantals, till the allotted ſpace of walling and eſpalier is regularly covered with bearers at equal diſtances, ſtill continuing them all at full length in all future training, as far as the ſcope of walling, &c. will permit; and they will all naturally form fruit-ſpurs at every eye, almoſt their whole length, and the ſame branches continue in a fruitful ſtate a great number of years.

In the general training of theſe trees, let it always be remembered, that all branches trained in for bearers muſt never be ſhortened, becauſe, as we before obſerved, their fruit-ſpurs being generally produced firſt towards the end, then gradually along the

ſides of the branches, of from two or three to twenty years growth or more, ſo that there is no need of ſhortening to procure a new ſupply of bearing wood annually, as in peaches, nectarines, and ſuch other trees as bear fruit upon the young wood only; but in Pears the ſame branches not only continue for years in a bearing ſtate, but become every year more and more fruitful even to a great age, if not retarded and ſpoiled whilſt in training by ſhortening, as is very often the caſe; for ſhortening theſe ſort of trees, both ſtops their progreſs of growth and bearing, by reducing the length of the branches conſiderably, and cutting away the firſt fruitful parts, as they generally bear fruit at or near the extremity; and by reducing their length it forces out numerous, ſtrong, uſeleſs ſhoots from the eyes below, at the places where fruit-buds would have been otherwiſe formed, and inſtead thereof crowd the tree with a great redundancy of unneceſſary wood, and but little fruit; but by training the bearers from the firſt at full length, and continued ſo as far as the allotted ſpace will poſſibly allow, they not only ſooner fill the ſpace of walling, &c. but emit fruit-buds from almoſt every eye, and bear abundantly.

When the trees have once thus filled the wall or eſpalier with branches, they need but very little farther ſupply for many years, and that only occaſionally, according as any worn-out or decayed branch occurs, and wants renewing with young wood. See PRUNING.

But two prunings every year are requiſite to preſerve their regularity and bearing ſtate, a ſummer and a winter pruning

The ſummer pruning ſhould be begun in May, or early in June, and rub off all the ſuperfluous and unneceſſary ſhoots of the year, and all fore-right and other ill-placed ſhoots, retrenching them quite cloſe, being careful to leave the terminating ſhoot of every horizontal or bearer entire; and reſerve here and there a well-placed ſhoot towards the lower parts in particular, where there are any apparent vacancies, or if none, it is proper to retain ſome ſhoots as above, till winter pruning, and if then not wanted, can be eaſily retrenched, training them in for the preſent at full length.

The winter pruning may be performed any time from the fall of the leaf until March; in this pruning examine the branches in general, and ſee if they are any where too much crowded, or are trained irregularly; and if they are, let them be regulated as they may require; at the ſame time examine if there are any vacancies; and in which caſe train ſome contiguous ſhoots reſerved in the ſummer dreſſing, to ſupply the deficiencies; all other ſhoots trained in laſt ſummer, not now wanted to ſupply any vacant ſpace, muſt be cut clean out cloſe to the branches, being careful ſtill to preſerve the terminating ſhoot of every branch entire, likewiſe all the fruit-ſpurs in every part, and faſten in all the branches regularly at full length.

But in winter-pruning old trees however, decayed and worn-out branches will ſometimes occur; be careful therefore to cut out all decayed wood whereſoever it appears, training young, if poſſible, in its ſtead; likewiſe where any branch, either through exceſſive age or bad management, is become barren or worn out, let it either be retrenched to ſome eligible lower young branch or ſhoot, or may previouſly have young bearers in training a year or two or more from the bottom between the main horizontals, which is eligible enough in old trees, when there is any apparent vacancy happening either by decayed wood or worn-out branches, and according as the young ones aſſume a bearing ſtate, retrench the bad wood, and train the young ſupply in its place; in this caſe look always well to the bottom of your trees, and if any good ſhoots offer where there is an appearance of a vacancy like to happen, train them up between the main branches to be advancing to a bearing ſtate, to be ready when wanted.

Where any of the choicer ſorts of theſe trees have, through great age or bad culture, become infirm, their branches in general worn out, and not furniſhed with bearing wood, we ſhould endeavour to renew them with young bearers, by heading the branches wholly down near the bottom; in winter or ſpring, they will break out in the old wood, and in the following ſummer furniſh a large ſupply of ſtrong young ſhoots, which train agreeable to the rules before laid down, and they will ſoon form a new tree, as it were, and bear plenty of good fruit.

After each winter-pruning of all theſe trees againſt walls and eſpaliers, they will require a general nailing, &c. let this always be done with great regularity, training all the branches horizontally as ſtraight as poſſible their whole length, at equal diſtances. See WALL TREES, ESPALIERS, &c.

As

As to dwarf ſtandards of theſe trees, ſee their mode of training, &c. under the article DWARF TREES.

The culture of the borders wherein theſe wall and eſpalier Pears are growing is, common digging once every year at leaſt, and with the addition of manure occaſionally in common with the other parts of the garden; though if ſome good rotten dung is applied every other year, and the ground well dug or trenched every winter, it will greatly promote the ſize and perfection of the fruit.

*Planting them for Standards and general Culture.*

Standards of any ſorts of Pears bear plentifully in any open ſituation, though the fruit may not always be ſo large and fine as thoſe of wall and eſpalier trees: ſummer and autumn Pears however ripen in great perfection on ſtandards. Obſerve in planting them, that trees of from two or three to four or five years old, having tolerable heads, are of a proper age and ſize for planting, and are preferable to older trees for any general plantation. See PLANTING. And that having been trained as directed in their nurſery culture, and formed heads, conſiſting of ſeveral branches, let them be planted with all their heads entire, except retrenching any very irregular-placed branch, but retain all the others, and ſuffer them to remain at full length, and plant them in the uſual manner of tree-planting. See PLANTING.

In their future growth, ſuffer them to branch away as faſt as they are able, according to nature, and they will ſoon form large branchy heads, ſuffering all their branches to remain entire, and extend themſelves in length, and they will all emit numerous fruit-ſpurs, and bear plenty of fruit.

The general culture of ſtandard Pears, in reſpect to pruning, is very trifling, and that only required occaſionally, probably once only in ſeveral years; ſuch as the retrenching any very irregular growing branch, ſuch in particular as grow croſs-ways, and greatly incommode the neighbouring branches, alſo to thin ſuch branches that are very much crowded, and confuſe the head conſiderably; all decayed wood and ſuckers from the root and ſtem. See PRUNING, article *Pruning Standards.*

Where theſe ſtandard trees are ſituated in a garden, having the ground well trenched every year, and occaſionally enriched with dung, they generally produce finer fruit than in orchards.

*Gathering and preſerving the Fruit.*

The maturity of Pears, after arriving to full growth, is generally known by their changing from a green to a yellow or reddiſh colour, &c. and by their frequent falling from the tree, and when with a gentle twiſt or turn up, eaſily quit their hold; but thoſe tokens are more particularly obſervable in ſummer and autumn Pears; for winter Pears being not near ripe when gathered, often require a good pull before they quit the branches.

Summer Pears ripen in ſucceſſion in different ſorts, from about the beginning or middle of July till the middle of September; many of the earlieſt ripen all at once, as it were, and continue good but a few days, either on the tree or when gathered, nor will any of the ſorts keep good long; and none of the ſorts ſhould hang on the tree till full ripe, otherwiſe moſt of them will be mealy and inſipid; let theſe ſorts therefore be gathered as ſoon as they are arrived to full growth, and juſt begin to colour and diſcover maturity, but before they become ſoft and mellow; obſerving that for family uſe, they may be gathered from the tree according as they attain perfection; but let the general crop of each ſort be always taken down before they ripen fully, and lay them in any dry room; none of the kinds will keep long, ſome only a few days, and ſcarcely any of them a fortnight, though from different varieties ripening at different times, the ſucceſſion is continued for eight or ten weeks.

Autumn Pears ripen in different varieties, from about the middle of September till the end of October; ſome of the forwardeſt ripen eatable on the tree, others requiring to lie ſome time after being gathered before they acquire perfection. Let the different ſorts of this claſs of Pears be gathered according as they arrive to maturity; thoſe deſigned to keep ſome time ſhould be gathered juſt when they have attained full growth; their maturity or full growth on the trees is known by their frequent dropping, and by their readily quitting the tree on being handled: gather them in dry weather, and lay them in a dry cloſe room, or in baſkets, each ſort ſeparate; they will thus gradually mellow, collect rich juices, and delicious flavour.

Winter Pears attain their full growth on the trees about the end of October or beginning of November, but the eatable kinds do not acquire maturity for eating on the tree, nor for ſome conſiderable time after they are gathered, ſome probably in a month, others two or three, and ſome more, and ſome ſorts not till ſpring following, and often continue in perfection till ſummer, as is noticed in the deſcription of the different ſorts of winter Pears; but the baking kinds may be uſed any time from November during their continuance.

All the Winter Pears however ſhould be indulged with as full growth on the tree as the weather will permit, even until the end of October or firſt or ſecond week in November, for the later kinds, if the ſeaſon continues mild; be cautious however to get them gathered before attacked by much froſt.

In gathering all ſorts of Pears for keeping, always chuſe dry weather, and when the fruit is alſo quite dry.

The method of gathering theſe fruit is to pull one and one by hand, by a gentle twiſt, or turn upward, and if they readily ſeparate, it is a ſign of full growth, more particularly the ſummer and autumn Pears; being particularly careful in gathering not to bruiſe them, and let each ſort be kept ſeparate.

According as they are gathered, carry them directly into the fruitery rooms, where thoſe intended for long keeping, ſuch as the late autumnal and all the winter Pears, ſhould be previouſly laid up in heaps, and covered with cloths, in order to promote a perſpiration, and diſcharge the watery moiſture, which prepares them for keeping, as well as improves their flavour: this fermentation or ſweating will be effected in a week or fortnight, when they ſhould all be wiped dry with a woollen cloth; then let a quantity be depoſited upon the ſhelves of the fruitery, to remain for firſt eating; others, for longer keeping, pack up in baſkets, thickly lined within with ſtraw, then ſome thick paper; and having filled the baſket with the Pears, cover them down alſo with paper, then a good thickneſs of ſtraw over all, faſtening the whole as cloſe down as may be, tying a label, with the name of the fruit and time of ripening, to each baſket, and then place them in a cloſe warm room; they will thus ſucceed thoſe on the ſhelves for uſe, and keep good a long time; and if ſome are alſo put into large earthen jars, plugged and roſined down perfectly cloſe to exclude the external air, they will keep a long time ſound, eſpecially the lateſt ſorts, which will keep till May or June.

They ſhould be occaſionally looked over, to remove all ſuch as aſſume any tendency to decay, before they ſpread the putrefaction to the adjacent fruit; this ſhould be properly attended to at intervals, to thoſe on the ſhelves or any where in the open fruitery in particular, as they are more liable to putrefaction, and can be eaſily examined; but thoſe packed up in cloſe baſkets, &c. are not ſo eaſily obſerved, nor will they require it ſo often; it is however proper, after ſome conſiderable time, to look them over.

*Apple Kinds.*

PYRUS *Malus.*

The Apple-tree (*Malus*) being now conſidered as a ſpecies of *Pyrus*, as formerly obſerved, we have arranged it accordingly under that head, together with all its varieties, which are exceedingly numerous in the difference of the fruit: ſome for eating, others for baking, boiling, cyder, &c. and may be ſaid to be the moſt valuable fruit in the world for its various œconomical uſes, and long continuance in perfection, which, in different ſorts, is the year round.

Claſs, order, and characters, are the ſame as the *Pyrus Communis.*

Of the Apple kind there may be reckoned two ſpecies, viz. Common Apple-tree, compriſing many varieties—Sweet-ſcented Virginian Crab, two varieties.

The ſpecies are,

1. PYRUS *Malus.*

*Malus, or Common Apple-tree.*] Grows twenty or thirty feet high, having oval, ſerrated leaves, and ſeſſile umbels of whitiſh-red flowers, ſucceeded by large, roundiſh, and oblong fruit, concave at the baſe.

*Varieties.*] The varieties of this ſpecies are amazingly great, in reſpect to the differences of the fruit; and the botaniſts contend that the Wilding, or Crab-Apple of the woods and hedges, is the original kind, and from the ſeed of which the cultivated Apple was firſt obtained; whoſe varieties, no doubt, are multiplied to ſome hundreds, in different places, having been all firſt accidentally obtained from the ſeed or kernels of the fruit, and the approved ſorts continued and increaſed by grafting upon Crabs or any kinds of Apple-ſtocks; but although the number of different varieties is very conſiderable, there are not

not above forty or fifty ſorts retained in the nurſerymen's catalogues as principal fruit, which however is fully ſufficient to furniſh a ſupply of Apples all the year. The different varieties arrive to full growth in ſucceſſive order, from July till the end of October; the ſummer kinds, that ripen before the middle of September, are many of them in eating immediately from the tree, and do not keep long: but moſt of the autumn and winter kinds, that ripen from the middle or end of September till the end of October, improve in perfection after being gathered, as they lie in the fruitery; and many of the winter kinds in particular keep good many months, even until the arrival of Apples next ſummer.

The moſt noted varieties are generally known by the following names, &c.

*Genniting, or June-eating Apple.*] A ſmall Apple, oblong and roundiſh in different varieties, of a moſt agreeable flavour, and valuable for its early perfection, being in eating ſometimes in June, againſt a wall, but ripens principally in July.

*Margaret Apple.*] A middle-ſized, oblong Apple, one ſide tinged with red, the other pale green, and is highly flavoured; ripe for eating in July and Auguſt.

*Common Codlin.*] A largiſh, irregular, greeniſh-yellow Apple, tinged with red, valuable for its early growth, being fit for many culinary purpoſes, from June till Auguſt and September, and is alſo a tolerable good eating Apple when arrived to maturity: ripens fully in Auguſt, becoming of a bright yellow and red colour.

*Kentiſh Codlin.*] A large, longiſh, irregular Apple, excellent for culinary uſes, in Auguſt and September.

*Summer Pearmain.*] A middle-ſized, oblong, fine, red-ſtriped Apple, good for eating and culinary uſes: ripe in Auguſt and September.

*Scarlet Summer Apple.*] An oblong, deep-red, beautiful Apple, for eating and kitchen purpoſes, in Auguſt and September.

*Summer Calville.*] A large, fine, ſummer Apple: ripe end of Auguſt and September.

*Quince Apple.*] A ſmall, roundiſh, quince-ſhaped, ruſſet and yellow Apple; ripe for eating in Semptember.

*Summer Rembourge.*] A large, handſome, variegated red and yellow Apple: ripe in Auguſt and September.

*Loan's Pearmain.*] A middle-ſized beautiful Apple, having one ſide finely reddened, the other variegated alſo with red: ripe in September and October.

*Royal Pearmain.*] A large, oblong, beautifully reddened Apple, for eating and culinary uſes: ripe in September and October.

*Red Autumn Calville.*] A moderately-large, oblong, fine-red Apple, of a vinous aromatic flavour: ripe in autumn.

*White Autumn Calville.*] A large, oblong, fine-eating Apple: ripe in autumn.

*Golden Ruſſet.*] A roundiſh, middle-ſized, ruſſet-yellow, good eating Apple: ripe about autumn.

*Golden Rennette.*] A middle ſized, roundiſh, beautiful, red and yellow Apple, having a firm fine-flavoured pulp, excellent both for eating and baking, &c. ripe in October, and continues till ſpring, if packed up cloſe.

*Golden Pippin.*] A ſmall, roundiſh, and oblong, beautiful-yellow Apple, firm, and admirably fine flavoured: ripe in October, and may be kept till the ſpring.

*Courpendu, or Hanging Body.*] A large, oblong, handſome Apple, red next the ſun, the other ſide pale, and generally hangs downward: in eating in autumn and part of winter.

*Grey Leadington Apple.*] A longiſh, moderately large, greyiſh-green, very fine Apple, being a moſt excellent table fruit: ripe in autumn and part of winter.

*Aromatic Pippin.*] A middle-ſized, roundiſh Apple, one ſide ruſſet-coloured, the other yellowiſh, is of an agreeable aromatic flavour: ripe for eating in October, keeping good a long time.

*Violet Apple.*] A largiſh, oblong Apple, one ſide reddened, the other variegated, having a firm ſweet pulp, flavoured like violets: ripe in October, &c.

*White Rennette.*] A large, roundiſh, whitiſh-green Apple, having a firm ſugary pulp, good both for eating, and for baking and boiling: ripe end of October, continuing good till January.

*Rennette Griſe.*] A roundiſh, middle ſized Apple, grey-coloured on one ſide, the other tinged with yellow; in fine eating from October till Chriſtmas or longer.

*Winter Pearmain.*] A moderate-ſized oblongiſh Apple, red on one ſide, the other variegated red and yellow; is tolerable for eating, but very good for boiling: ripe end of October, continuing good all winter.

*Kentiſh*

*Kentiſh Pippin.*] A large, oblongiſh, whitiſh-green Apple, good for eating, but particularly adapted for the kitchen uſes, from October till ſpring.

*Nonpareil Apple.*] A middle-ſized, roundiſh, ſomewhat-flatted, duſky-ruſſet-green Apple, having a firm pulp, replete with a ſharp agreeable juice; a moſt excellent winter fruit for the deſert; in eating from November or December until May.

*Large Nonpareil.*] A large, round, light-ruſſet and yellowiſh Apple; is a fine handſome fruit, but does not continue in perfection ſo long as the common Nonpareil; in eating from November or December till March.

*Holland Pippin.*] A large, oblong, greeniſh Apple, having the eye pretty much ſunk; is tolerable for eating, but is in great eſtimation for culinary purpoſes, from October until March or April.

*Monſtrous Rennette.*] A remarkably-large oblong Apple, one ſide red, the other green, valued chiefly for baking or boiling; in November and December, &c.

*None Such Apple.*] A roundiſh beautiful Apple, being finely tinged with red on one ſide; is highly flavoured, and excellent both for eating and culinary uſes: ripe about autumn, and continues till the end of December.

*Royal Ruſſet.*] A fine, large, roundiſh-oblong, deep-ruſſet-coloured, rough Apple, having a ſoft, yellowiſh pulp, of a mild flavour, and is admirable for all culinary uſes in particular; is in perfection from October or November until April.

*Embroidered Apple.*] A moderately-large, beautiful Apple, adorned with broad red ſtripes; is a middling fruit, both for eating and kitchen purpoſes, and is in perfection in winter.

*Wheeler's Ruſſet.*] A middle ſized, roundiſh flatted, ruſſet-coloured, and yellowiſh Apple, having a firm, briſk, agreeably reliſhed pulp, both for eating and culinary uſes, and is in perfection all winter and ſpring.

*Pile's Ruſſet.*] A ſmaller, middle-ſized, oblong-oval Apple, ruſſet-coloured on one ſide, green on the other, having a very firm fleſh, of a ſharp acid reliſh; is by ſome eſteemed for eating, but is in high repute for baking, continuing in perfection all winter until April or May.

*Stone Pippin.*] A pretty large, whitiſh, very hard Apple, having a ſour unpleaſant pulp eaten raw, but is in good eſtimation for baking; is in perfection all winter, ſpring, and great part of ſummer.

*Barnard's Baking Apple.*] A very large, fine, baking Apple, in perfection in winter, and keeps good all ſummer.

*Kitchen Rennette.*] A large handſome Apple, in high repute for all culinary uſes: in perfection all winter.

The above varieties being the moſt approved ſorts, they are cultivated in moſt of the nurſery-gardens for ſale.

The following are leſs material varieties of eating and culinary Apples mentioned in ſome fruit catalogues,—Summer Ruſſet, a roundiſh, ruſſet-coloured Apple—Summer Pippin, a roundiſh yellow Apple—L'Api, a ſmall bright-red Apple—Tranſparent Apple, having a pellucid pulp——Virgin Apple, long and beautifully red—Aniſe Apple, longiſh, and flavoured like aniſeed—Gilliflower Apple, middle-ſized, and delicately reddened—Salmon Apple, longiſh, red, and yellow fruit—Margil Apple, middle-ſized, ridged, and red-ſtriped—Kirton Pippin, roundiſh, and often cracked—Lemon Pippin, ſmall, roundiſh, yellow fruit—Aclemy Ruſſet, a roundiſh, ruſſet-coloured Apple——Gray's Pippin, large, roundiſh, grey, and green Apple—Winter Greening, a very large green Apple—Black Pippin, a large dark-green Apple—Partridge Apple, a large kitchen Apple—Lord Iſlay's Pippin, a middling roundiſh Apple—Spencer's Pippin, a middling, round, browniſh and yellowiſh-green Apple—Winter Pippin, a roundiſh firm Apple—Coſtard Apple, large, irregular, and red ſtriped—Winter Rambour, a large, round, red Apple—Cat's-head Apple, very large, for culinary uſes. Of the above, the firſt five or ſix ſorts are forward Apples, and all the others are autumn and winter fruit, and moſt of which may be uſed occaſionally for eating and kitchen uſes.

And of Cyder Apples, the following are the principal ſorts—Redſtreak Apple—Royal Wilding—Everlaſting Hanger——Gennet Moyle—Whitſour Apple—John Apple—Woodcock Apple—Herefordſhire Underleaf—which, with many others, are well known in the cyder counties, as Devonſhire, Herefordſhire, &c.

To the above liſts may alſo be added the following varieties, being all off-ſpring of *Pyrus Malus.*

*Fig Apple.*] Having been formerly ſuppoſed that the trees produced fruit without any previous

vious visible flower, like the Fig-tree, it obtained the name *Fig Apple*; but the fact is, the tree certainly produces flowers, that are visible, which however are almost apetalous, or without petals, so are not conspicuous like those of the other varieties, but are nevertheless furnished with the generative organs, succeeded by proper fruit.

*Paradise Apple.*] A low weak-shooting tree, of a shrub-like growth, produces small fruit of no value, so is retained in some gardens for variety, and is sometimes used as stocks on which to graft other Apples, to render them of a very dwarfish growth for small gardens, and for planting in pots for curiosity.

*Dutch Paradise Apple.*] Grows a little stronger than the former, and is often used for stocks to graft upon to form dwarf trees for small gardens.

*Wilding, or Crab Apple.*] The tree grows more than twenty feet high, producing small, roundish, and oblong yellow fruit, intolerably sour, harsh, and disagreeable to the taste, so are used only for making verjuice. The trees of this variety grow wild in England, &c. in woods and hedge-rows, and are rarely cultivated in gardens, except for stocks on which to graft the cultivated Apples, for which purpose they have great merit, as trees grafted on Crab-stocks are generally very hardy and durable; sometimes, however, a few plants are introduced in the shrubbery plantations for variety, and are employed by the farmers for making field hedges, as being of quick growth, soon run up, and form a hedge expeditiously. See HEDGES.

Thus far terminates our list of the varieties of this great species *Pyrus Malus*.

There are however, besides the above, many other varieties of less value, but those of the above list are the generally known approved sorts; all the varieties, good and bad, are the off-spring of this one species (*Pyrus Malus*), the trees of all the sorts having oval sawed leaves, and sessile umbels of flowers, appearing in April and May, upon short spurs on the sides and ends of the branches, succeeded by fruit soon after, growing to perfection in different sorts, from July until the end of October, as before observed; those however that ripen before the middle of September keep but a short time, some of the forwardest probably not above a fortnight, others a month, or but little more; but the winter kinds continue in succession several months, and if a quantity of the latest are packed up close in baskets, lined with straw, to exclude the air, they will continue sound and good till next summer.

The following species and variety are American shrubs, retained here in shrubberies for diversity.

²PYRUS *Coronaria.*

*Sweet-scented Crab of Virginia.*] Grows twelve or fifteen high, having angular, serrated leaves, pedunculated umbels of whitish-red sweet-scented flowers, succeeded by small round Crabs, remarkably sour and austere.

*Variety.*] Evergreen Virginian Crab-tree.

Both the varieties are continued distinct by grafting, or by layers or cuttings.

*General Observations on the common Apple-tree.*

The trees of all the varieties of the Common Apple bear well in any mode of training, such as in espaliers, against walls, and all kind of standards; they however are rarely indulged with walls, as all the sorts of Apples attain full perfection without that aid, the walls being commonly reserved for such tender fruits as stand more in need of their assistance; in espaliers, however, it is eligible to have a collection of the choicer sorts, as in this mode of training the fruit generally attain greater perfection as to size, beauty, and flavour, than in standards; but all the varieties likewise acquire good perfection on standards of all sorts, though in a less degree; and it is from common high standards that the general supply of Apples is obtained for common use, and for the supply of markets, making cyder, &c.

In espaliers the trees may either be arranged by themselves, or in assemblage with Pears, &c. alternately, to effect the greater variety, being generally arranged around the outer boundaries of the quarters of the kitchen-garden, in the borders verging the main walks; but some may also be arranged in any other department, either for the sake of variety or convenience. See ESPALIERS.

And in common standards they may be both disposed in ranges thinly in the garden, and formed into orchards, according to the supply required; and in the cyder counties they plant them out in large fields, in wide ranges, to admit of having crops of corn, &c. between; but in common orchards they are planted about thirty or forty feet distance, and the ground is generally laid down in grass. See ORCHARDS.

Dwarf standard Apples are sometimes raised, a few for variety or curiosity, and if

if properly trained, will bear in very great perfection. See DWARF TREES.

The mode of bearing of all the varieties of Apples is principally upon ſhort ſpurs, iſſuing from the ſides of the branches of from two or three to many years old, as obſerved of Pears and plums, &c. formed firſt towards the extremity of the branches, then by degrees along the ſides, provided the branches are always trained at full length, as adviſed for other trees that bear chiefly upon ſpurs, as ſhortening promotes luxuriancy, and forces out numerous ſtrong wood ſhoots in the places where fruit ſpurs would have been formed; but being trained always entire, they aſſume a moderate growth, and gradually emit natural ſpurs in every part; and as the ſame branches and ſpurs remain fruitful many years, determines, that in the general courſe of training and pruning theſe trees, we ſhould not ſhorten their branches, except occaſionally in the firſt and ſecond year after grafting, if thought neceſſary, to force out lower laterals to give the head its firſt proper form; afterwards, permit the branches to extend generally at full length, both in eſpaliers, &c. and all manner of ſtandards, and thus they will all ſoon form a bearing ſtate.

Apple-trees often begin bearing at two or three years old, and at ſix or eight will bear in tolerable plenty according to their ſize.

*Method of Propagation, &c.*

All the varieties were firſt accidentally obtained by raiſing them from the kernels of the fruit, but we cannot depend upon ſeedlings to continue the ſame ſort of fruit.

Grafting therefore is the mode of propagation to increaſe and continue the different varieties the ſame; performing it upon Crab, or any kind of Apple ſtocks, raiſed from kernels, both for dwarfs and ſtandards; alſo upon Codlin and Paradiſe Apple-ſtocks, raiſed from cuttings and layers, when deſigned to have eſpaliers and other dwarf trees, as low as poſſible, to be confined within a moderate ſpace, or for ſmall gardens: ſome ſorts of Apples may alſo be raiſed by layers and cuttings, particularly the common Codlin, which may likewiſe be raiſed from ſuckers, from the root and ſtem of ſuch trees that are wholly of the Codlin kind quite from the root; however, the beſt general method of propagating all the kinds of Apples is by grafting upon the proper ſtocks, as aforeſaid.

The method of raiſing the different ſorts of ſtocks for the above purpoſe is, the Crab and Apple-ſtocks are raiſed from the kernels of the fruit; but the Codlin and Paradiſe-ſtocks muſt be raiſed by cuttings and layers, to continue them with certainty of the ſame kinds and moderate growth: however, as to the Crab and Apple-ſtocks, they may be raiſed from the kernels of any of the ſorts, procuring the kernels in autumn or winter, either from rotted fruits, &c. or from ſuch as have been preſſed for verjuice and cyder, clearing them from the groſſeſt of the pulp; then ſow them in beds of light earth, moderately thick, either all over the bed, or in drills, covering them full half an inch deep; they will come up in the ſpring, when, if the ſeaſon proves dry, water them occaſionally, which will greatly forward the ſeedlings and ſtrengthen their growth, and in autumn, winter, or ſpring following, they may be planted out in nurſery rows, previouſly ſhortening their tap-roots, and planting them in lines two feet and a half aſunder, to remain for grafting; and after having from one to two or three years growth here, they will be fit for grafting, particularly for dwarfs, or even for full and half ſtandards, if intended to form the ſtem from the graft, which is an eligible method for theſe trees; but if the ſtock is to form the ſtem, they will require three or four years growth, to riſe to a proper height, ſeven feet for full, and four or five for half ſtandards.

The work of grafting all the ſorts is the ſame as for other fruit trees, and ſhould be performed in March, either by whip-grafting, cleft-grafting, &c. according to the ſize of the ſtock. See GRAFTING.

Having however provided proper grafts of the different ſorts of Apples you intend to propagate, then let thoſe ſtocks deſigned for dwarfs of all ſorts be grafted within ſix inches of the ground; and ſtandards may alſo be grafted low, and one ſhoot from the graft trained up for a ſtem, or may be grafted on tall ſtocks, inſerting the grafts at ſix feet high: the grafts of all the ſorts will ſhoot the ſame year, and by the autumn following the trees having formed little heads, conſiſting of two, three, or four ſhoots, may then be tranſplanted finally into the garden and orchard, or may be retained a year or two, or longer, in the nurſery, as occaſion may require, obſerving however to train them for the purpoſes intended, ſuch as dwarfs for eſpa-

eſpaliers, &c. and uprights for ſtandards, heading the dwarfs down in March following, within ſix inches of the graft, to force out more laterals below to form a fuller head, proceeding immediately near the bottom, ſo as to fill the eſpalier, &c. equally with branches, quite from within ſix or eight inches of the ground, regularly upward. But as to ſtandards, thoſe grafted low muſt conſequently be trained with one ſhoot upright, at full length, for a ſtem, ſix feet high at leaſt before it is topped; though if grafted on tall ſtocks of height ſufficient for a ſtem, the ſhoots from the graft may either be headed to five or ſix eyes, if you would have them form a more ſpreading head, or may remain entire, and aſpire more in height, and aſſume a more upright pyramidal growth: in all the modes of training, be careful to keep the ſtems clear from all lateral ſhoots, diſplacing all ſuch as ſoon as they appear, and encourage only a proper ſet of branches at top to form the head.

When theſe trees, however, have heads from one to two or three years old from the graft, they are of a proper age for final tranſplantation; though trees of four or five years old will alſo ſucceed very well, and even trees of ſix or eight years growth may alſo be ſafely tranſplanted if required; but younger trees generally grow better and make more progreſs in the end.

The public nurſery-gardens are generally well furniſhed with all the varieties of theſe trees for ſale, either quite young from the graft, or trained trees of ſeveral years growth, at very moderate prices.

The ſeaſon for planting them is, any time in mild weather, from the end of October till March; but if planted in autumn, or early in winter, they will fix themſelves more firmly before attacked by the drought of the following ſummer.

They will ſucceed in any common ſoil of a garden and orchard, and in any free ſituation, except in low very moiſt land, in which they are apt to canker and ſoon go off: in a pliable loam they are generally very ſucceſsful: be, however, in no great anxiety about the ſoil, any middling ſoil of a garden, orchard, or field, not too wet, will do very well, being properly prepared, by good trenching, where the ranges of trees are to ſtand.

*Firſt, of planting them in Eſpaliers.*

Eſpalier Apple-trees ſhould be ranged at not leſs than twenty feet diſtance; but if twenty-five or thirty feet, it will be more eligible, eſpecially for trees grafted on crab or apple-ſtocks, which being free ſhooters, their branches will readily fill that ſpace. However, as to trees grafted on codlin and paradiſe-ſtocks, eighteen or twenty feet may be a ſufficient diſtance; though the latter in particular, is ſometimes planted only twelve or fifteen feet aſunder, as being a very moderate ſhooter: it is, however, adviſable to allow every ſort full room enough, according to their growth, to have room to extend their branches always at full length; obſerving, as the trees having been headed down in the nurſery, and thereby produced laterals forming tolerable heads of ſeveral regular branches, they ſhould now be planted with all their ſaid heads entire, only retrenching any very irregular growth, that do not range conſiſtent with the intended form, and prune any broken roots, then having opened a capacious hole for each tree at the above diſtances, proceed to plant them in the uſual manner as explained in the article *Planting*, being careful to place them with their branches ranging the way of the eſpalier, then let all the branches be trained in horizontally to the right and left, an equal number on each ſide, all at full length, five or ſix inches aſunder, and according as they ſhoot in ſummer ſtill continue them along entire; at the ſame time train in a farther ſupply of new ſhoots, to encreaſe the number of horizontals or bearers; and thus continue encreaſing their number, every year, till the eſpalier is regularly filled from the bottom to top; preſerving all the branches at full length, as far as the allotted ſpace will admit, for the reaſons before explained, both here and under the article Pear, for theſe and the Pear-tree require almoſt exactly the ſame management.

With reſpect to their general culture, they muſt conſtantly have a ſummer and a winter-pruning annually: in the ſummer-pruning to cut out all the ſuperfluous and ill-placed ſhoots of the year, and train regular ones towards the lower parts in vacant ſpaces, if any, at leaſt to remain till winter, ſome of which may be then wanted to fill ſome unforeſeen vacancy, clearing out all others at this time as cloſe as poſſible. And in winter-pruning examine the branches in general, if any worn-out or decayed parts appear, now is the time to retrench them, retaining

young in their place; and if any vacancy occur, retain ſome contiguous young ſhoot to fill it: all others, not now wanted, cut clean out, cloſe to the branches, ſtill continuing all the branches, and any occaſional ſupply of ſhoots, at full length, as far as their limited bounds will allow; then train the whole regularly, tying them in as ſtraight and cloſe to the railing as poſſible, about ſix inches aſunder.

As the Apple and Pear-tree are nearly of the ſame temperature, manner of growth, and mode of bearing, they require nearly the ſame culture; and having treated more fully on the Pears in reſpect to pruning in walls and eſpaliers, which for the general part may be applied to Apples, we refer to that article for more particulars. See PYRUS *Communis*, PRUNING, and ESPALIERS.

In the article Pear-tree, we give ſome hints of another method of training in eſpaliers or for walls, which may alſo be applied to Apples if any one incline to put it in practice for variety.

*Planting them in Standards.*

Standard Apples may be planted both in the garden and orchard: in the garden however they ſhould be arranged but thinly, to admit of undercrops growing freely without interruption of their ſpreading branches.

Obſerve to plant principally full ſtandards for the general ſupply; and half and dwarf ſtandards chiefly for variety, or for ſmall gardens.

The ſtandards having been trained in the nurſery with tolerable good heads, they ſhould now be planted with all their heads entire: if any are intended for the kitchen-garden, plant them at leaſt forty feet diſtance; and for a full plantation to form an orchard, allow thirty feet diſtance every way. Open for each tree a wide hole, trim any broken roots, but leave all the others entire, and plant them with the uſual care, as directed in the article *Planting*; and as ſoon as planted let every one be well ſtaked to ſupport them firmly upright, and prevent their being diſturbed in rooting by tempeſtuous winds. See ORCHARD and PLANTING, &c.

Smaller growing ſtandards ſuch as codlins and dwarfs upon paradiſe ſtocks, may, if required, be planted only at twenty feet diſtance, though if there is room to allow a greater diſtance it will be the greater advantage.

The ſtandards being thus planted with their heads entire. Let them alſo in future advance with all their branches at full length, and for the general part take their own natural growth, and they will ſoon form numerous natural ſpurs in every part for bearing.

With reſpect to pruning theſe ſtandards, very little is required, and that probably not once in ſeveral years, which is only the retrenching any very irregular croſs-placed bough, or reduce to order any very long rambler; or when the head is become greatly crowded and confuſed, to thin out ſome of the moſt irregular growth, likewiſe all ſtrong ſhoots growing upright in the middle of the head, all dead wood, ſuckers from the ſtem and root.

As to half and dwarf ſtandards of theſe trees, they may be diſperſed in different parts of a garden to cauſe variety, managing them as the full ſtandards they will bear plentifully.

Dwarf ſtandards on the dwarf paradiſe ſtock, being very moderate ſhooters, may be planted in a little compaſs; and they are ſometimes planted in pots for curioſity, to place on a table, amidſt a deſert, with the fruit growing. See DWARF TREES.

*Gathering the fruit.*

Apples arrive to full growth in different ſorts ſucceſſively, one after another, from July until the end of October; the ſummer kinds continue but a ſhort time, but the autumn and winter-apples will keep from two or three to ſix or eight months, in different varieties.

The ſummer Apples ripen ſome in July, but principally in Auguſt and September, and are generally fit for uſe immediately from the tree, both for eating and culinary uſes, though ſome of the ſorts are fit for kitchen purpoſes by that time they are half grown, or before, particularly the common Codlin, which boils and bakes in good perfection when quite young, and until full maturity: however, the tokens of perfection, or full growth, of the different ſorts of ſummer Apples, is by their aſſuming a lively colour, emitting a fragrant odour, frequently falling from the tree, and by quitting their hold eaſily on being handled. They ſhould then be gathered and laid in ſome dry apartment for uſe; they will not keep long, nor indeed is it required, for they will

will be ſucceeded by much better in the autumn and winter kinds.

Autumn Apples arrive to maturity in different ſorts, from about the middle of September till the beginning of October: ſome being fit for uſe immediately from the tree, others require to lie a few weeks to mellow, eſpecially for eating: their full growth on the tree is known in ſome by their changing of a more lively colour, ſometimes imparting an agreeable ſmell, frequent dropping, and on being handled, by a gentle twiſt or turn upward, they readily quit the tree; at which which tokens of matureneſs, as they occur in the different ſorts, they ſhould be gathered in dry weather, and carried into the fruitery, where, with proper preſervation, hereafter noticed, they will keep a long time, ſucceeding one another for uſe two or three months, or longer, in the later kinds.

Winter Apples attain full growth about the middle or latter end of October; it is, however, proper to let them hang on the trees till towards the end of that month, or ſome of the lateſt kinds even till November, if the ſeaſon continues mild, but be careful to take them down before attacked by much froſt; gathering them in dry weather, and carry them directly into the fruitery or any dry apartment, and there prepared for keeping as hereafter directed, whereby ſome may be kept ſound and good for uſe till next June or July.

In gathering all the ſorts of Apples for keeping, always chuſe dry weather, and when the trees and fruit are alſo perfectly dry; obſerve likewiſe in gathering Apples for the table, and all kind of Apples, deſigned for keeping any conſiderable time, they ſhould be pulled one and one by hand. Where, indeed, large quantities are deſigned for cyder, or any other immediate uſe, they may be ſhaken down. However, all the fine eating and culinary Apples for keeping ſhould be carefully gathered by hand, by a gentle twiſt or turn upward, ſo as to detach them readily without breaking the fruit-buds; and as they are gathered carry them into the fruitery, &c. where, previous to putting them up for good, it will be proper to lay the choicer varieties of autumn and winter kinds in large heaps, to ſweat and diſcharge the watery juices by perſpiration, which both prepares them for keeping and improves their flavour, then, after having ſweated a week or fortnight, wipe them all perfectly dry, and lay them up where they are to remain. A quantity may be depoſited on the ſhelves and floor of the fruitery, and cloſely covered down a foot thick with ſtraw to exclude the air. And it is proper to pack a quantity of the fineſt winter kinds in large baſkets or hampers, thickly lined round within ſide with ſtraw, covering the fruit down alſo cloſely with the ſame material, to exclude the external air as much as poſſible, whereby they will keep much longer in perfection; and if ſome are packed up in large earthen jars, and cloſely plugged down, they will keep longer ſtill, for it is by theſe methods that the fruit is kept ſo fine and fair even until the return of Apples next year; obſerving, the drier and cloſer the room, in which the fruit is depoſited in all the above methods, the better they will keep; being careful to examine the fruit occaſionally, in order to pick out all that diſcover any tendency to corruption; thoſe in the open fuitery are eaſily looked over, but thoſe in the baſkets and jars not ſo readily, nor indeed will they need it ſo much; however, it is proper, after ſome conſiderable time, to examine them, eſpecially towards ſpring, &c.

In London, great quantities of the fineſt winter Apples are depoſited in the proper ſeaſon in the cloſe warehouſes in Thames-ſtreet, and other parts contiguous to the river, for ſale in winter and ſpring, being packed cloſely in baſkets, &c as aforeſaid, and placed in very cloſe apartments where but little air can come; where they are kept perfectly ſound and beautiful all winter, even until May, June, and July, ſelling them out to the retailers, and we may ſee them in the fruiterers ſhops, and in ſtalls in the ſtreets, exceeding fine in May and June; but after being expoſed to the open air a day or two, they ſhrink, loſe colour, and ſoon decay.

It ſhould therefore be remarked, that cloſe packing theſe fruit, and keeping them in as cloſe apartments as poſſible, keeping the doors and windows, always cloſely ſhut to exclude the external air, is a certain, method of preſerving them long in full perfection, for the more they are expoſed to the air the ſooner they will decay; keep them therefore always as cloſe as poſſible.

*Quince kinds.*

PYRUS *Cydonia*, Quince-tree.

The Quince-tree *(Cydonia)* was long ranged as a diſtinct genus, but is now a ſpecies

of *Pyrus*. It is of the tree kind, of moderate growth, and deciduous; producing large, round, golden-yellow fruit, generally too auſtere and harſh to eat raw, being employed principally for culinary purpoſes.

Claſs, order, and characters the ſame as the Pear, &c. *(Pyrus Communis.)*

There is but one ſpecies, viz.

PYRUS *Cydonia.*

*Cydonia, or Quince-tree.*] Grows ten or twelve feet high, having ſlender branches and ſhoots, forming a low moderately ſpreading head, garniſhed with large, oval, entire leaves, very hoary underneath, and large, ſolitary, whitiſh-red flowers all along the ſides of the branches, ſucceeded by large, round, and pyramidal golden-yellow fruit.

The botanic deſcription is,—*Pyrus* with entire leaves and ſolitary flowers.

*Varieties.*] There are ſeveral varieties of this fruit, but the following are the moſt valuable ſorts.

*Apple-Quince.*—A large, ſhort, roundiſh, apple-ſhaped, golden-yellow Quince.

*Pear-Quince.* — A large, pyramidal, or pear-ſhaped, deep-yellow Quince.

*Portugal Broad-leaved Quince.*—The tree is of larger growth and with broader leaves: pear-ſhaped fruit, having a tenderiſh pulp, which bakes and boils to a fine purple colour.

*Eatable Quince.* — A middle-ſize downy Quince, having a tender pulp, and is ſometimes eaten raw, though for the moſt part rather diſagreeable to moſt palates.

Moſt of theſe fruit though remarkably beautiful to the eye, are too harſh and unpalatable to eat raw; their chief uſes being for baking and ſtewing, to make marmalade, and to mix in apple pies, tarts, &c. to improve the flavour.

The trees, however, merit culture in every curious collection, ſome for the fruit, and others for ornament; but conſidered as fruit-trees, a few is ſufficient to produce fruit enough to ſupply a large family, and may be trained both in ſtandards and eſpaliers to effect the greater diverſity; and as ornamental trees, they are eligible furniture for the ſhrubbery, &c. their numerous large flowers and golden fruit will effect a delightful variety; the flowers in ſpring and the fruit in autumn. Young Quince-trees are alſo in repute for ſtocks, on which to graft and bud Pears, to dwarf them for walls and eſpaliers. See PYRUS *Communis* and STOCKS.

They are very hardy, and will grow any where, but delight moſt in ſomewhat moiſt ſituations, and are therefore often planted by the ſides of ponds or ditches of water.

*Method of Propagation, and general Culture.*

The trees may be raiſed from the kernels of the fruit ſowed in autumn, but there is no depending on having the ſame or any good fruit from ſeedlings.

But the ſeveral varieties may be continued always the ſame by the propagation, by cuttings and layers; alſo by ſuckers from ſuch trees as grow upon their own roots, and may likewiſe be propagated by grafting and budding upon their own or Pear-ſtocks raiſed from the kernels.

The propagation by cuttings, layers, and ſuckers, may be performed in autumn, winter, or ſpring. Chuſe young wood for the cuttings and layers, which plant and lay in the common method, and they will be rooted by next autumn, then tranſplanted into nurſery rows two feet aſunder; plant the ſuckers alſo at the ſame diſtance, and here train the whole for the purpoſes intended: if for ſtandards, run them up with a ſtem, to any deſired height, from three to ſix feet, then encourage them to branch out at top, to form a head; and thoſe deſigned as dwarfs muſt be headed near the ground, and trained accordingly for eſpaliers, or dwarf ſtandards, as may be required, as directed under thoſe articles.

When they have formed tolerable heads plant them out finally.

Standard Quinces, deſigned as fruit-trees, may be ſtationed in the garden or orchard, and ſome by the ſides of any water in bye places, ſuffering the whole to take their own natural growth.

And as eſpaliers, they may be arranged in aſſemblage with other moderate-growing trees, ſuch as Apples and Pears on Paradiſe and Quince ſtocks, Cherries, &c. and train them as directed for Apples and Pears in eſpaliers.

In ſhrubberies they may be planted either as full or low ſtandards, and permit them to take their own way of growth.

# Q.

QUERCUS, Oak-tree.

This famous genus compriſes a noble collection of moſt eminent foreſt and ornamental trees, both deciduous and evergreen kinds obtaining in ſtature from twenty to near a hundred feet, in different ſpecies, garniſhed with oblong and moſtly ſinuated leaves, and monoecious apetalous flowers, of but little appearance, ſuceeded by oval nuts, called acorns.

Claſs and order. *Monoecia Polyandria.*

*Characters.*] CALIX, male and female, flowers ſeparate on the ſame plant; the males diſpoſed in loſe amentums, each floret having a monophyllous four or five-parted calix; and the females ſitting cloſe to the buds, have monophyllous, hemiſpherical, coriaceous, rough, entire cups.—COROLLA, no petals.—STAMINA, many ſhort filaments in the males, having didymous antheræ.—PISTILLUM, a ſmall oval germen in the females, quinquefid ſtiles, and ſimple permanent ſtigmas.—PERICARPIUM, none; the ſeed, an oval nut or acrorn, with a leathery univalvular ſhell, is fixed by its baſe into the calix.

There are about fourteen ſpecies, nine deciduous, and five evergreen kinds; but the *Common Engliſh Oak* is the glory of the collection, for its ſuperior growth, and great worth and value, as a timber-tree, for bulk, ſtrength, and duration. Several of other ſpecies have alſo their ſhare of merit, ſome as foreſt-trees, others to adorn ornamental plantations.

*Deciduous kinds.*

Under this head, Deciduous Oaks is compriſed, the common Oak of our woods and foreſts, and ſeveral ſpecies of North America, and ſome foreign parts of Europe, as France, Spain, Portugal, and Italy, as expreſſed in their titles; all of which are of the tree kind, deciduous and of hardy growth.

[1]QUERCUS *Robur.*

*Robur, or Common Engliſh Oak.*] Grows from about 60 or 70 to 100 feet high, with a prodigious large trunk, and monſtrous ſpreading head, oblong leaves, broadeſt towards the top, the edges acutely ſinuated, having the angles obtuſe.

*Varieties.*] Striped-leaved Oak, having the leaves finely ſtriped with white.

This ſpecies grows in great abundance all over England in woods, foreſts, and hedge-rows; is naturally of an amazing large growth, there being accounts of ſome above an hundred feet ſtature, with wonderful large trunks and ſpreading heads, and is ſuppoſed will continue its growth many centuries.

[2]QUERCUS *Prinus.*

*Prinus, or Cheſnut-leaved American Oak.*] Grows fifty or ſixty feet high; having large, oblong-oval, ſmooth leaves, pointed both ways, the edges ſinuated-ſerrated with the ſinuſes uniformly round.

[3]QUERCUS *Phellos,*

*Phellos, or Willow-leaved American Oak.*] Grows forty or fifty feet high, having long, narrow, ſmooth, entire leaves like thoſe of willow.

*Variety.*] Dwarf Willow-leaved Oak.

[4]QUERCUS *Alba.*

*White Virginian Oak.*] Grows thirty or forty feet high, having a whitiſh bark, long, obliquely-pinnatifid, light-green leaves, the ſinuſes and angles obtuſe.

[5]QUERCUS *Nigra.*

*Black Virginian Oak.*] Grows thirty or forty feet high, having a dark-coloured bark, large, wedge-ſhaped, ſlightly-trilobated leaves.

[6]QUERCUS *Rubra.*

*Red Virginian Oak.*] Grows about ſixty feet high, having a dark-greyiſh bark, long obtuſely-ſinuated leaves, with the ſinuſes terminated by briſtly points, and have ſometimes red-ſpotted veins, but generally dying in autumn to a reddiſh colour, remaining on the trees late in the ſeaſon.

[7]QUERCUS *Eſculus.*

*Eſculus of Pliny, or Cut-leaved Italian Oak.*] Grows about thirty feet high, having a purpliſh bark, oblong, deeply-ſinuated, ſmooth leaves, and

and long, ſlender, cloſe-ſitting acorns in very large cups.

[8]QUERCUS *Ægilops.*

*Ægilops, or Large Prickly-cupped Spaniſh Oak.*] Grows ſeventy or eighty feet high, or more, with a very large trunk, and widely-ſpreading head, having a whitiſh bark, large, oblong-oval, deeply-ſerrated, ſmooth leaves, the ſerratures repand or bowed backward, and large acorns placed in ſingularly large prickly cups.

This is a noble ſpecies, almoſt equal in growth to our common Engliſh Oak.

[9]QUERCUS *Cerris.*

*Cerris, or Smaller Prickly-cupped Spaniſh Oak.*] Grows thirty or forty feet high, oblong, lyre-ſhaped, pinnatifid, tranſverſly-jagged leaves, downy underneath, and ſmaller acorns, placed in prickly cups.

All the above ſpecies of deciduous Oak, may be cultivated both as foreſt-trees and in diverſifying large ornamental plantations; as timber or foreſt-trees, however, is their principal merit, but the Engliſh Oak claims the preference for general uſe, as the moſt valuable for timber, and ſhould raiſe a greater quantity of it accordingly.

They are all eaſily raiſed from ſeed, i. e. the acorns, ſowed in the autumn an inch deep. See their *Propagation.*

*Evergreen kinds.*

Of evergreen Oaks there are five ſpecies.—Common evergreen Oak. — Holly-leaved Oak.—Cork-tree.—Scarlet Oak,—and Moluccan or Live Oak; ſome as timber-trees, others for ornament, all of which retain their leaves the year round; are originally of foreign growth, moſtly from the ſouthern parts of Europe, and one from America, but have been long in the Engliſh gardens as ornamental trees, and ſome are arrived to a conſiderable growth, they being all very hardy, and proſper in any open ground.

[10]QUERCUS *Ilex.*

*Ilex, or Common Evergreen Oak.*] Grows forty or fifty feet high, having a ſmooth bark, oval and oblong, undivided, ſerrated, petiolated leaves, downy and whitiſh underneath.

*Varieties.*] Broad-leaved.—Narrow-leaved, and with ſometimes both ſorts, and other different ſhaped leaves on the ſame tree; alſo ſometimes with ſawed and prickly leaves.

[11]QUERCUS *Gramuntia.*

*Montpelier Holly-leaved evergreen Oak.*] Grows forty or fifty feet high; oblong-oval, cloſe-ſitting, ſinuated, ſpinous leaves, downy underneath, bearing a reſemblance to the leaves of holly.

[12]QUERCUS *Suber.*

*Suber, or Cork-tree.*] Grows thirty or forty feet high, having a thick, rough, ſungous, cleft bark, oblong-oval, undivided, ſerrated leaves, downy underneath.

This ſpecies furniſhes that uſeful material Cork; it being the bark of the tree, which becoming of a thick ſungous nature, under which, at the ſame time, is formed a new bark, and the old being detached for uſe, the tree ſtill lives, and the ſucceeding young bark becomes alſo of the ſame thick ſpongy nature in ſix or ſeven years, fit for barking, having likewiſe another freſh bark forming under it, becoming Cork, like the others, in the like period of time; and in this manner theſe trees wonderfully furniſh the Cork for our uſe, and of which is made the corks for bottles, bungs for barrels, and numerous other uſeful articles.

The tree grows in great plenty in Spain and Portugal, and from which countries we receive the Cork.

[13]QUERCUS *Coccifera.*

*Scarlet, or Kermes Oak.*] Grows but fourteen or fifteen feet high, branching all the way, and of buſhy growth; large, oval, undivided, indented-ſpinous leaves; and producing ſmall glandular excreſcencies, called kermes or ſcarlet grain, uſed by the dyers.

The ſmall ſcarlet glands, found on this tree, is the effect of certain inſects depoſiting their eggs betwixt the bark of the branches and leaves, cauſes an extravaſation of the ſap, and forms the excreſcence or ſubſtance in queſtion, which being dried, is the kermes or ſcarlet paſtel.

[14]QUERCUS *Molucca.*

*Moluccan Oak, commonly called American Live Oak.*] Grows about forty feet high, having oval, ſpear-ſhaped, ſmooth, entire leaves, and ſmall, oblong, eatable acorns.

All the above fourteen ſpecies of *Quercus* produce flowers annually in the ſpring, about April and May, of a yellowiſh colour, but make no ornamental appearance, and are males and females ſeparated in the ſame tree; the males being in looſe amentums, and the females ſitting cloſe to the buds in thick leathery hemiſpherical calixes, ſucceeded by the fruit or acorns, which are oval nuts fixed by their baſe into rough permanent cups, and moſtly ſit quite cloſe, and ſome on ſhort

foot-

ſoot-ſtalks, ripening in autumn, which in the common Engliſh Oak is in great abundance, and often in tolerable plenty on ſome of the other ſorts; thoſe of all the kinds ſerve for propagating their reſpective ſpecies; they are alſo excellent food for ſwine and deer, the common Oak in particular.

Oak-trees, of all the above ſorts, may be employed in gardening to diverſify large ornamental plantations in out-grounds, and in forming clumps in ſpacious lawns, parks, and other extenſive opens; the evergreen kinds in particular have great merit for all ornamental purpoſes in gardens.

But all the larger growing kinds, both deciduous and evergreens, demand eſteem alſo as firſt-rate foreſt-trees for their timber: the *Engliſh Oak*, however, claims precedence as a timber-tree, for its prodigious height and bulk, and ſuperior worth of its wood, and is ſuppoſed will ſtand one thouſand years before it totally decays, ſo is ſingularly valuable for all ſtrong and durable purpoſes, ſuch as ſhip-building, ſome parts of houſe-building, park-paling, poſts, railing, and innumerable other uſes. But all the other large-growing Oaks may likewiſe be introduced in foreſt-tree plantations, for Oaks in general prove valuable timber, and of all others the moſt durable; and beſides their value as timber-trees, their annual crops of acorns prove moſt excellent food for fattening hogs and deer; and when the trees are felled for uſe, their bark, being ſtripped off, proves a moſt valuable material to the tanners for tanning leather; and after having ſerved that purpoſe, is of great uſe in gardening for making bark hot-beds, commonly called bark-beds, being the moſt eligible kind of hot-beds for the culture of the pine-apple, and all other tender exotics of the hot-houſe temperature. Oaks, therefore, being of ſuch ſuperior value, every poſſeſſor of conſiderable eſtates ought to be particularly aſſiduous in raiſing woods of them, which is effected by ſowing the acorns either in a nurſery, and the plants tranſplanted where they are to remain, or ſowed at once in the places where they are always to ſtand. See their *Propagation*, PLANTATIONS, and FOREST TREES.

All the ſorts will proſper in any middling ſoil and open ſituation, though in a loamy ſoil they are generally more remarkably proſperous; however, there are but few ſoils in which Oaks will not grow; they will even thrive tolerably in gravelly, ſandy, and clayey land, as may be obſerved in many parts of this country of the common Oak.

*Their Propagation and general Culture.*

Oaks in general are raiſed from the acorns, which, of the common Oak, are produced abundantly all over England, and ſhould be gathered in autumn when quite ripe, juſt as they drop from the trees; but the acorns of moſt of the foreign oaks are generally procured from abroad; and thoſe of all the ſpecies are ſold by the ſeedſmen.

Obſerve to ſow all the ſorts as ſoon after they are obtained as poſſible, becauſe they are apt to ſprout if they remain long out of the ground. Prepare for their reception a ſpot of light ground in the nurſery, dividing it into four-feet wide beds, and in which ſow the acorns, either in drills two inches deep, in five or ſix rows, lengthwiſe the bed, or rake the mold off the bed, the depth of two inches, into the alleys, then ſow the acorns all over the ſurface, about two or three inches apart, preſs them down with the ſpade, and ſpread the earth evenly over them two inches thick.

They will come up in the ſpring; give them occaſional waterings and weedings, and when the plants are one or two years old, it is proper to plant them out in nurſery-rows: this may be done in autumn, winter, and early in the ſpring, taking them carefully up out of the ſeed-bed: ſhorten their tap-root, and trim off any lateral ſhoots from the ſtem, leaving their top perfectly entire, then plant them in lines two feet and half aſunder, and fifteen or eighteen inches in the rows, where let them ſtand, with the uſual nurſery care, till of a proper ſize for final tranſplantation, either as foreſt trees, or ſome for ornament, training them up as full ſtandards, with clean ſtraight ſtems and with their tops ſtill entire.

Remark, the propagation of the ſtriped-leaved varieties of the common Oak, and any particular variety of the other ſpecies, muſt be effected by grafting, as they will not continue the ſame from ſeed, ſo the grafting may be performed upon any kind of Oakling-ſtocks raiſed from the acorns, and train them for ſtandards like the others.

*Tranſplanting them finally.*

When the trees of all the ſorts are from about three or four to ſix feet ſtature, they ſhould be planted out for good, though, conſidered

ſidered as foreſt or timber-trees in particular, it is more eligible to plant them out finally whilſt they are quite young, not advanced above from two to three or four feet in height; or if planted immediately from the ſeed-bed, where they are finally to remain, it may prove a greater advantage, as the quite young Oaks root more freely than older trees, and take a freer growth.

However, in this final tranſplantation, obſerve to plant thoſe deſigned as foreſt or timber-trees, in large open tracts of grounds to form woods, placing them in rows only four feet aſunder, and one or two feet in the rows, to allow for a gradual thinning. See PLANTATIONS and PLANTING.

Sometimes, however, large plantations of theſe trees, for woods, are raiſed by ſowing the acorns at once in the places where they are to remain, as formerly noticed, it being the opinion of many, that the trees, raiſed at once from the acorn, receiving no check by removal, much outſtrip the tranſplanted trees in growth. The method is this; the ground being prepared by good ploughing and harrowing, then, in autumn, having procured a proper quantity of acorns, draw drills acroſs the ground four feet aſunder, and two inches deep, drop the acorns therein ſix or eight inches aſunder, allowing for ſome failing and for thinning hereafter, covering them in evenly with the earth the depth of the drills, or inſtead of drilling them in they may be planted with a dibble the ſame depth and diſtance.

As to the general management of theſe trees in woods or timber plantations, it is the ſame as directed for foreſt trees in general, under the article PLANTATION, which ſee.

In planting any or all the ſpecies of Oak, for ornament or variety in large pleaſure-grounds, ſome may be diſpoſed in aſſemblage in any continued plantation, ſome in clumps, and others as ſingle objects.

QUINCUNX Planting.

The Quincunx order of planting ſignifies trees planted by fives, four of them forming a ſquare, and the fifth placed in the middle, thus ⁘ and may be repeated over and over in one continued plantation, with as many trees in ſeveral ranges as thought proper, and was formerly a faſhionable mode of planting groves and other regular plantations in the following arrangement.

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Somewhat of this mode of arrangement ſhould generally be obſerved in the diſpoſition of ſhrubbery plants, &c. though not in a regular Quincunx, but ſomething nearly in this order, which both gives the ſhrubs a greater ſcope of growth, and they ſhew themſelves to greater advantage.

This mode of planting is alſo proper in the kitchen-garden, in tranſplanting many kind of eſculent plants, ſuch as lettuce, endive, ſtrawberries, and even all the cabbage kinds, and many other plants which gives them a greater ſcope to grow than if planted exactly ſquare at the ſame diſtance.

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# R.



RACEMUS, a Cluſter, or mode of cluſter-flowering, being a long cloſe Cluſter of flowers or fruit, conſiſting of one common peduncle or foot-ſtalk, branching and ſupporting many ſhort lateral ones all along its ſides, theſe immediately ſuſtaining the flowers and fruit: examples of a *Racemus* are bunches of grapes and currants, See VITIS and RIBES.

RACER, or Rutter. A cutting implement uſed in racing or marking out the proper width, length, and thickneſs of graſs turfs for gardens, previous to fleaing or cutting them up for laying.

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It is a ſimple but uſeful tool for the above purpoſe; conſiſting of a ſtrong wooden handle about four feet long, having the point-end of an old ſcythe for a cutter, fixed at the lower end, with the point and edge downward, to cut into the ſward; the handle ſhould be about an inch and half thick, growing gradually thicker towards the lower end, and ſomewhat bending or ſloping at the bottom to reſt on the ground, having at the bottom part a ſlit longitudinally, to receive the cutter, which ſhould be five or ſix inches long, placing it with the point and edge downward, as aforeſaid, projecting an inch and half out at the back of the bottom of the handle in a ſlanting manner with the point inwards, fixing it firmly in that poſition, ſo as when puſhed before you it may expeditiouſly cut the ſward as you race it along.

Having this inſtrument, then mark out on the ſward the width of the turf intended to be cut, which ſhould be generally a foot wide and a yard long, and ſtraining a line tight, ſtrike the racer into the ſward cloſe to the line, run it along, it will expeditiouſly cut its way and divide the ſward to a proper depth; directly place the line a foot farther, and race it out as before, and ſo on to as many widths as may be wanted; then race it croſs ways in yard lengths: being thus raced out, the turf cutter with his turfing-iron proceeds to cut them up, and he will flay them off at a great pace in exact widths and lengths as above.

RADIATUS *flos*, a radiated flower.—Such compound flowers as are furniſhed with a radius or ſpreading circumference. See RADIUS.

RADIUS, the Radius, or circumference, or outer ſpreading part of compound flowers, conſiſting of many flat florets ſet round the diſc or middle, and ſpread out all around, reſembling the figure of a radiant ſtar, exemplified in *aſter* or ſtar-wort, marigold, ſunflower, and many others of the compound tribe, and of which there are both ſingle and double flowers; the ſingles having only one ſeries of florets in the radius, but the doubles have from two or three to many ſeries, continued ſometimes to the very center. See COMPOSITUS *flos*.

RADICULA (from *Radix*) Radicle or Little Root, or ſmall fibrous part iſſuing firſt either immediately from the ſeed, or that which terminates the ſtock or main root, penetrates into the ſoil and draws nouriſhment for the production and ſupport of the plant, and is the principal and eſſential part of every root of all vegetables.

RADIX, the Root, or lowermoſt part of a vegetable ſituated, within the ground, deſtined to draw nouriſhment from the ſoil for the production and ſupport of all the other parts of the plant.

A Root conſiſts of two parts, viz. 1. The ſtock or main Root (*Caudex*) that ſtrikes downward into the earth, and puts forth radicles or fibres. 2. The radicle (*Radicula*) ſmall thread-like roots or fibrous parts, terminating the ſtock or main Root, or proceeding from any part thereof, and is the principal or eſſential part of every Root, as it penetrates far into the ſoil and attracts nouriſhment to the main ſtock, thence communicated to the ſtem, branches, and other parts of the vegetable.

From the various ſtructures and directions of the ſtock or main Root the botaniſts diſtinguiſh them by the following terms.

*Perpendicular Root.*] Deſcends in a ſtrait line downwards. *Radix perpendicularis.*

*Horizontal Root.*] Runs in a horizontal or tranſverſe direction along under the ſurface of the earth. *Radix horizontalis.*

*Simple Root.*] Such that is ſingle and not ſubdivided.

*Branched Root.*] Divided into lateral branches, which alſo ſubdivide into ramifications. *Radix ramoſa.*

*Spindle-ſhaped, or tapering Root.*] Is oblong, thick upwards, and tapers gradually to the lower extremity, ſuch as common radiſh, carrot, parſnep, &c. *Radix fuſiformis.*

*Bulbous Root.*] Roundiſh and oval ſwelling bulb, compoſed ſome of many ſucculent imbricated ſcales, others of many involving coats, and conſiſt of two ſorts: 1. Scaly bulbs, (*Bulbus Squamoſa*) formed of many ſcales lying over one another, as in the lily. 2. Tunicated or coated bulbs (*Bulbus tunicatus*) formed of ſeveral tunics or coats cloſely involving one another, as in the tulip and onion, &c. *Radix Bulboſa.*

*Tuberous Root.*] A thick fleſhy knob, formed of a ſolid lump, ſome roundiſh, others irregularly knobbed, and ſome oblong, compoſed either of one ſingle knob, or ſeveral collected into bundles; examples of the tuberous rooted tribe are the potatoe, Jeruſalem artichoke, anemone, pœony, orchis, filipendula, and hemerocallis; the turnep,

carrot, and parſnep, may alſo be conſidered of the ſame kind, and all other Roots that are formed of a thick, fleſhy, ſolid ſubſtance. *Radix tuberoſa.*

*Fibrous Root.*] Compoſed wholly of a number of radicles, or ſlender fibrous parts, and may be ſaid to be the moſt common ſort of Root, to numerous herbaceous plants in particular, and conſiſts of perpendicular Roots, horizontal Roots, ſimple Roots, branched Roots; ſome being very thin and fine like threads, others ſomewhat fleſhy, &c. *Radix fibroſa.*

*Creeping Root.*] Runs along juſt under the ſurface of the earth to a conſiderable length, emitting at certain diſtances ſmall fibres below and ſhoots at top. *Radix repens.*

*Globular Root.*] Roundiſh, fleſhy, ſolid Root of the tuberous kind, ſuch as earth-nut, bulbous fumatory, &c. *Radix globoſa.*

*A grumous or bundled Root* ] Compoſed of many ſmall, oblong, fleſhy, kernelly parts, or knobs, all connected at top, and terminated below in radicles or fibres, ſuch as *Ranunculus*, &c. *Radix faſciculata.*

*Granulous aggregate Root.*] Conſiſts of many ſmall roundiſh knobs like grains of corn all, cluſtered together, as in white ſaxafrage. *Radix granuloſa.*

*Pendulous cluſtered Root.*] Compoſed of ſeveral fleſhy, roundiſh, knobs, or tubers, ſuſpended, as it were, at the ends of fibres, as in filipendula, pœony. potatoe, Jeruſalem artichoke, aſphodelus, hemerocallis, &c. all of which being of the tuberous-rooted kind. *Radix pendula.*

*Handed tuberous Root.*] An oblong tuberous Root, dividing and ſpreading like an open hand, as in handed-orchis. *Radax tuberoſa palmata.*

*Teſticulated Root.*] Compoſed of two roundiſh tuberous knobs joined in a teſticulated manner, as in ſome ſorts of orchis. *Radix teſticulata.*

*Jointed Root.*] Long, thickiſh, and jointed at certain diſtances. *Radix articulatus.*

*Woody Root.*] Becoming of a hard, tough, woody texture, ſuch as the Roots of all trees, ſhrubs, and under-ſhrubby plants. *Radix lignoſus.*

*Tap Root.*] Any main Root that runs ſtrait downward in a perpendicular direction, like a carrot, parſnep, &c. and is often applicable to the tree and ſhrub kind, when the main Root runs directly downright; and in tranſplanting ſeedling-trees in the nurſery, &c. it is occaſionally recommended to ſhorten the Tap-Root, with a deſign both to prevent their penetrating too deep into the bad ſoil, and ſo force out horizontal or lateral roots, to extend horizontally nearer the ſurface into the good earth, where they may draw better nouriſhment. See PLANTING.

As to the duration of Roots, they are either annual, biennial, or perennial, viz.

*Annual* ROOTS.——Such that endure but one year at moſt, then totally periſh; as of all thoſe vegetables denominated annual plants. *Radix annuus.*

*Biennial* ROOTS.—— Continue but two years, then wholly decay. *Radix biennis.*

*Perennial* ROOTS ——Being of many years duration, and in ſome plants both Root and ſtem ſubſiſt for many years, particularly all the tree and ſhrub kind: many herbaceous vegetables likewiſe enjoy the ſame privilege, though the greater part are only perennial in Root, renewing the ſtalks, &c. annually: however, all herbaceous plants having durable or perennial Roots, are from this circumſtance denominated perennials. *Radix perennis.*

Roots, we obſerved for the general part, penetrate within the ground to ſeek nouriſhment from the ſoil; there are however ſome exceptions; the miſletoe plant attaching itſelf to the branches of trees, with its Root uppermoſt, which penetrates into the bark and wood, drawing moiſture for its ſuſtenance. Moſſes and ſome of the fungi likewiſe attach their Roots to the bark of trees; lichens to ſtones and rocks, and ſome aquatics ſwim both Root and top on the ſurface of the water.

RAKE, a Garden-Rake for raking ground and raking in ſeeds, &c.

To ſuit every department of gardening completely with Rakes, there ſhould be three or four different ſizes from about ſix to eighteen inches long in the head, having handles from ſix to eight or nine feet in length, and the head teethed with iron teeth two or three inches long, and placed from one to two inches aſunder, according to the reſpective ſizes of the Rakes for particular uſes, as below.

*A large* RAKE.—Having the head about twenty inches long, the teeth three inches and half, and placed two inches aſunder; being proper for raking ſtubborn or rough dug ground, and for raking in large kinds of ſeeds, raking off large weeds after hoeing, and

and for many other purpoſes in large gardens.

*A middle-ſized* RAKE—Having the head ſixteen inches long, the teeth three inches, and placed one inch and half aſunder; being proper for all common raking in ordinary light ground, and for raking in moſt kinds of ſmall ſeeds, and many other purpoſes.

*A ſmall* RAKE.—Having the head twelve inches long, the teeth two and a half, and placed one inch aſunder; proper for fine-raking beds, borders, &c. and raking between certain plants occaſionally, where larger rakes cannot be introduced.

*A little* RAKE. —Having the head eight inches long, the teeth two and a half, and placed one aſunder; being very uſeful for raking between ſmall plants in beds and borders and other ſmall compartments where the plants ſtand cloſe.

Garden Rakes are made commonly with wooden heads and iron teeth, and have a ſtrait pole for a handle an inch and half thick, and from about ſix to eight or nine feet long, as aforeſaid, having each end of the head hooped with an iron ring to ſecure it from ſplitting; and the teeth being generally made flat, the back-edge rounded off to a point, the other ſtraight, and are placed edgeways with the points all inclining moderately inward. But ſome Garden Rakes have both head and teeth wholly of iron, which, if made neat and light, the teeth well ſet and firmly faſtened, they prove tolerable handy and durable; but as the teeth are rarely ſet with a proper come, as in the wooden-headed rakes, and being very liable to get looſe, I ſhould therefore rather prefer the wooden-headed ones for general ſervice.

Entire wooden Rakes, having the head, teeth, and handle, wholly of wood, are ſometimes uſed for particular purpoſes, ſuch as raking in ſome light kinds of kitchen-garden ſeeds in very light ground, and for raking off large hoed-up weeds in vacant or wide clear ſpaces, raking up ſwarths of mowed ſhort graſs before the ſweepers, alſo fallen leaves of trees in autumn, and clippings of hedges, &c. and for ſeveral other uſes.

RAKING. Raking ground is a neceſſary culture in many caſes, to break the ſurface of the ſoil ſmall, and render it fine for the reception of particular ſorts of ſmall ſeeds and plants previous to ſowing and planting.

Likewiſe after ſowing ſeeds in the broad-caſt way on rough ground, we rake them in to bury them a proper depth for germinating: Raking in ſeeds is the moſt expeditious mode of covering them in garden-ſowing all kinds of ſmall ſeeds of hardy plants; the ground being dug, &c. and the ſurface remaining rough after the ſpade, the ſeed is then ſowed, and then raked in with an even hand, raking only once or twice in a place, a back and a fore ſtroke, which being generally ſufficient to cover moſt ſorts of ſeeds effectually; and is the moſt elegible and expeditious method in the ſowing moſt kinds of eſculent or kitchen-garden ſeeds, and of moſt kinds of hardy flower ſeeds, and ſome ſorts of ſmall tree and ſhrub ſeeds. See SOWING SEEDS.

Raking the ground alſo among growing plants that ſtand diſtant enough to admit the rake, is in many caſes of ſervice, particularly where the ſurface is inclinable to bind, or where numerous ſmall ſeed-weeds appear, it will looſen the ſoil and retard the growth of the weeds.

And Raking ground is in many caſes neceſſary for ornament, ſuch as raking ſmooth the beds, borders, and other compartments of pleaſure-grounds, which being now and then repeated gives an air of culture and neatneſs to the premiſes.

Likewiſe after hoeing up weeds Raking them off is eligible in all conſpicuous parts of the pleaſure ground, in particular where neatneſs is required, alſo in other diſtricts where the weeds are like to grow up again or ſhed their ſeeds as they lie on the ground.

All Raking ſhould generally be performed in dry weather and when the ground is alſo moderately dry, for if raked in rainy weather, or when the ground is very moiſt and cloggy, the ſurface is apt to cake and bind hard; this ſhould be particularly attended to in ſowing ſeeds, nor will rough digged ground rake well when it is become very dry at top, eſpecially if it was digged wet and ſuffered to lie till the clods have become dry and hard, in which caſe it will not rake well until mellowed or pulveriſed by a ſhower of rain.

But moſt of our common light garden-ground generally rakes beſt when freſh digged, perhaps the ſame day, or day after at fartheſt, before dried too much by the ſun and wind, or rendered wet by rain, &c.

However Raking ſhould be performed when the ground is in ſuch order as the clods will readily break and fall to bits under the rake without clogging much thereto.

With reſpect however to Raking ground ſowed with ſeed, particularly in ſpring and ſummer it is of importance to ſow the ſeed generally when the ground is freſh turned up, provided it will readily rake without clogging as aboveſaid.

RANUNCULUS, Ranunculus and Crowfoot.

This genus compriſes a large collection of hardy herbaceous perennials of the grumous and fibrous rooted tribe; ſome of them moſt beautiful flowery plants of the gardens, others common weeds of the fields and meadows; the garden kinds having great merit as flower-plants for adorning the flower-garden and pleaſure-ground, garniſhed with divided and entire leaves in different ſpecies, and moſtly upright branchy flower-ſtalks, from half a foot to two feet high, terminated by pentapetalous and polyandrous flowers, having double varieties of exceeding beauty.

Claſs and order, *Polyandria, Polygynia.*

*Characters.*] CALIX, five oval concave coloured leaves.——COROLLA, five obtuſe petals, having ſmall ungues, and a nectarium formed of a ſmall open cavity near the baſe of each petal.——STAMINA, numerous filaments half the length of the petals, having oblong erect didymous antheræ.—PISTILLUM, numerous germina collected into a head, no ſtyles, but very ſmall reflexed ſtigmas.—PERICARPIUM, none, numerous irregular ſeeds attached to the common receptacle by very ſhort pedicles.

There are near forty different ſpecies of this genus, ſix or eight of which claim general eſteem as flowery plants for ornamenting the gardens, and a great number are common weeds in the fields, waters, and paſture ground, not having merit for garden culture: of the garden kinds, the principal ſort is the *Aſiatic or Turkey and Perſian Ranunculus*, which compriſe many hundred varieties of large, double, moſt beautiful flowers of various colours; but ſeveral other ſpecies having varieties with fine double flowers, make a good appearance in a collection, though as thoſe of each ſpecies conſiſt only of one colour, ſome white others yellow, they are inferior to the *Aſiatic Ranunculus*, which being large and diverſified a thouſand ways in rich colours, in different varieties; however, all the garden-kinds in general, deſcribed below, effect a very agreeable diverſity in aſſemblage in the flower compartments, &c. and they being all very hardy ſucceed in any open beds and borders, &c.

The moſt noted kinds for garden culture are the following eight ſpecies.

RANUNCULUS *Aſiaticus.*

*Aſiatic, or Turkey and Perſian Ranunculus.*] Hath a ſmall grumous or bundled root, compoſed of many ſmall knobbed parts connected at top; crowned with ternate and double-ternate leaves, having trifid-cut lobes; upright flower-ſtalks branching below, and riſing from ſix to ten or twelve inches high, terminated each by one large flower of many different colours and properties in the varieties; flowering in April, May, and June.

Is a native of Aſia, and introduced here long ſince from Turkey and Perſia, and by way of diſtinction is moſt commonly called ſimply *Ranunculus.*

*Varieties.*] The varieties of this ſpecies are amazingly numerous and are divided into two claſſes, the Old Turkey kind and the Perſian kinds, the varieties of the latter amounting to many hundreds and are conſiderably more various, rich, and beautiful in colour than the others.

*Old Turkey kinds.*] Riſe with a ſtrong generally unbranching ſtalk a foot high, terminated by one large double flower, ſometimes emitting one or two ſmaller ones from its ſides, and of which there are Red flowered,—Scarlet flowered,—yellow flowered—and Scarlet turban flowered, &c.—they being ſeldom tinged with different colours like the Perſian kinds.

*Perſian varieties.*] Riſe eight or nine inches high, generally branching from the bottom, producing from five or ten to twenty or thirty flowers on each root, and of which there are Single flowered——Semi-double flowered,——Full-double flowered, being large and full like a double roſe, generally filled with petals to the very centre, forming a regular, globular body of admirable elegance, of all ſorts of the moſt beautiful colours in different varieties, and of numerous degrees of deeper and lighter ſhades, ſtripes, and tinges in the ſeveral colours, ſo as to cauſe an aſtoniſhing diverſity of Reds,—Scarlets,—Crimſons,—Fleſh-colours—Purples—Blues,—Violet colours,—Whites,—Cream-colours,—Aſh-colours,—Yellows,—Orange-colours,—Lemon-colours,—Golden-yellow,

yellow,—Olive-yellows,—Browns,—Copper-colours,—Blacks,—Black-purples,——Black-violets,—Tawney-colour,—Coffee-colour, &c.—and with flowers of all the above colours variouſly tinged and ſtriped with two, three, or more different colours, in a very curious manner, forming the numerous varieties, amounting to above a thouſand, deſcribed in ſome of the eminent flower-dealers catalogues, varying from one another in ſome particular in different colours, tints, ſtripes, and variegations; and a farther encreaſe of new varieties are annually obtained from ſeeds, the ſeedlings generally flower the ſecond or third year, and the ſelect kinds are continued and encreaſed plentifully by offſets from the root, every ſummer after they have done flowering.

All the varieties flower commonly in April and May, but by late planting the roots the blow may be continued till June; and the ſingle and half double flowers are ſucceeded by abundance of ſeed, but rarely any from the full doubles: the ſemi-doubles, however, are greatly preferable to the ſingles, from which to ſave the ſeed for ſowing, as there will be a greater chance of having double flowers and ſeedlings in return.

The roots of all the varieties of this ſpecies are of the keeping kind, and being lifted in ſummer ſoon after flowering, the off-ſets ſeparated and properly dried, they may be kept out of the ground ſeveral months; but it is proper to plant a quantity in autumn, and the reſt in ſpring, in order to procure a longer ſucceſſion of the flowers.

Theſe roots are ſold by all the nurſerymen and ſeedſmen in great variety, at from two or three ſhillings to four or five pounds per hundred and ſometimes conſiderably more, for ſome very curious varieties.

They are all hardy enough to ſucceed in any common light garden-earth in open beds or borders, planted ſome in autumn about September, October, or November, but principally the two latter months, and the reſt in February; the fine ſorts being commonly depoſited in beds by themſelves in rows ſix or eight inches aſunder and two or three deep; both to exhibit a grand ſhew of the numerous varieties all together, and for the convenience of giving occaſional ſhelter from cutting froſts; the early autumnal plantings in particular, that appear above ground in winter or early in ſpring: though the latter autumnal plantings put in about November, as they will not come up ſo early, do not require ſo much care, and the ſpring plantings need no protection at all. As to the common or more ordinary kinds they may either be bedded like the others, or diſtributed about the open borders in little patches of three or four roots in each, in aſſemblage with other border flowers. See their *General Culture*.

[2]RANUNCULUS *aconitifolius*.

*Aconite-leaved White-mountain Crow-foot, or Fair-maid of France.*] Hath a ſtrong fibrous perennial root joined in a head, crowned with large quinate, or five-lobed leaves, all the lobes ſpear-ſhaped, cut, and ſerrated; upright, ſtrong, flower-ſtalks, a foot and half or two feet high, divided into many branches, garniſhed with ſmall leaves like the lower ones, and all the branches terminated by pure white flowers, appearing the end of May and beginning of June.

*Varieties*] Common ſingle-flowered,—Larger double-flowered, very beautiful, and worthy of a place in every garden.

[3]RANUNCULUS *Acris*.

*Upright Meadow Ranunculus, or Yellow, Crow foot.*] Hath a fibrous cluſtered root, joining in a head, crowned by tripartite-multifid, or much divided leaves; upright flower-ſtalks a foot high, branching at top, having the upper-leaves cut into many narrow ſegments, and all the branches terminated by a bright yellow flower, appearing in May.

*Varieties*] Common ſingle-flowered of the paſtures,—Double-flowered of the gardens,——Proliferous double-flowered, one flower growing out of the middle of another. The double kinds only are proper for garden-culture.

This ſpecies in its ſingle ſtate is found in abundance in every paſture ground, and is ſeldom admitted into gardens; but the double varieties are very pretty, and merit a place in every good collection of perennials.

[4]RANUNCULUS *repens*.

*Creeping, or running Yellow Crow-foot.*] Hath fibrous, perennial roots, crowned with compound leaves, trailing, creeping, ſhoots, rooting as they run along, and furrowed pedunculi terminated by bright yellow flowers, having ſpreading cups; flowering in May and June.

*Variety.*] Common ſingle-flowered of the meadows and paſtures,—Double flowered of the gardens.

[5]RANUN-

[5]RANUNCULUS *Ficaria.*

*Ficaria, Fig-wort, or Pile-wort.*] Hath a grumous or bundled tuberous root, heart-ſhaped, angular, ſmooth leaves, on ſtrong foot-ſtalks, and upright ſimple ſtalks four or five inches high, terminated by large ſhining yellow flowers, in March and April.

*Varieties.*] Common ſingle-flowered of the meadows, &c.—Double-flowered of the gardens.

[6]RANUNCULUS *Amplexicaulis.*

*Amplexicaulous, Plantain-leaved, Alpine Ranunculus.*] Hath a bundled perennial root, oval, acuminated leaves embracing the ſtalk, the ſtalk riſing from ſix to eighteen inches high, branching and terminated by ſeveral ſingle white flowers; appears in April.

[7]RANUNCULUS *Gramineus.*

*Gramous or Graſs-leaved Pyrenean Ranunculus.*] Hath a bulbous perennial root, ſpear-ſhaped, narrow, graſſy, ſeſſile leaves; upright ſtalks about a foot high, branching upwards, each branch terminated by a ſmall, pale, yellow flower; appearing in May.

*Varieties.*] Common ſingle-flowered, — Double-flowered.

[8]RANUNCULUS *Grandiflorus.*

*Great Yellow-flowered Oriental Ranunculus.*] Hath a fibrous perennial root, multifid or many-parted leaves; erect ſtalks a foot or more high, garniſhed with two alternate cloſe-ſitting leaves; and terminated by one large yellow flower; appearing in May.

The flowers of all the above eight ſpecies of *Ranunculi* in their ſingle or characteriſtic ſtate, conſiſt each of five obtuſe bright petals, and the middle filled with numerous ſtamina, &c. ſucceeded by abundance of ſeed; but in the double-flowered varieties the petals are multiplied in many ſeries, which in the full doubles are continued to the very centre, like a double-roſe, in which conſiſts their excellence as garden-flowers for ornament: though in theſe very luxuriant or full double-flowers, the multiplicity of petals often ſupplant all the ſtamina that no ſeed is produced. This however is amply compenſated by the ſingles and half-doubles, which are ſucceeded by great plenty of ſeed, ripening in June and July; but it is only of the *Aſiatic Ranunculus* that ſeed is required, which in this ſpecies in particular is always productive of a great variety of new ſorts, but not in any of the other ſpecies, remarking, that the fineſt ſemi-doubles are the ſorts from which to ſave the ſeed for propagation.

All the ſpecies are perennial in root, and annual in leaf and ſtalk, which riſe in ſpring and decay in ſummer and autumn ſoon after they have flowered; the roots of all the ſorts being abiding, encreaſe abundantly by off-ſets every year for propagating the particular varieties.

Conſidered as garden-flowers, all the ſorts demand attention, the Aſiatic kinds however ſtand foremoſt conſiderably in point of beauty, elegance, and variety, but ſome of all the ſorts are proper furniture for the borders and other compartments of the pleaſure-garden, where being diſpoſed in aſſemblage they will effect a good diverſity in flower for two or three months, and ſome of the fineſt of the Aſiatic varieties ſhould alſo be depoſited in beds by themſelves, as before obſerved, in order to exhibit a grand blow together; obſerving that the roots of the fine varieties of this ſpecies ſhould be lifted every year after blowing to ſeparate the off-ſets and freſh prepare the mould, &c. but all the other fibrous-rooted ſpecies being diſtributed about the borders may remain undiſturbed two or three years, or as it ſhall ſeem neceſſary according as they may want trimming to keep them within bounds, or to have the roots taken up occaſionally to part them for propagation.

*Culture of the Aſiatic Kinds.*

The *Aſiatic Ranunculus* in particular is in high eſtimation among the floriſts, and is deſervedly an object of admiration on account of the great number of the varieties and the beauties the flowers poſſeſs, in their elegance of form and vaſt variety and richneſs of colour render them ſuperior to moſt other flowers of the ſeaſon, and highly merit culture in every garden.

This ſpecies in all its varieties will ſucceed in any light, rich, garden earth; but the floriſts often prepare a particular compoſt for the fine varieties, conſiſting of good garden mould or paſture-earth, ſward and all, a fourth-parth of rotted cow-dung, and the like portion of ſea-ſand; (ſee COMPOST;) and with this they prepare beds four feet wide and two deep: however in default of ſuch compoſt, uſe beds of any good light earth of your garden; or if neceſſary it may be made light and rich with a portion of drift-

drift-ſand and rotten dung, cow-dung is moſt commonly recommended; but they will alſo thrive in beds of well wrought kitchen-garden earth, and they often proſper well in the common flower borders.

The ſeaſon for planting the roots is both in autumn and ſpring; the autumn plantings generally flower ſtrongeſt and ſooneſt by a month at leaſt, and are ſucceeded by the ſpring planting in May and June. Perform the autumnal planting in October and early part of November, but ſome plant towards the latter end of September in order to have a very early bloom; but thoſe planted in that month and beginning of October often come up with rank leaves ſoon after, in winter, ſo as to require protection in hard froſts; thoſe however planted about the middle or latter end of October and beginning of November rarely ſhoot up ſtrong till towards ſpring and will not require ſo much care of covering during winter; and the ſpring planting may be performed the end of January or beginning of February, or as ſoon as the weather is ſettled; they will not require any trouble of covering, and will ſucceed the autumnal plants regularly in bloom, and will flower in good perfection. Thus by two or three different plantings you may obtain a ſucceſſion of theſe beautiful flowers in conſtant bloom from April till the middle of June; but the autumnal plants for the general part not only flower ſtrongeſt, but the roots encreaſe more in ſize, and furniſh the beſt off-ſets for propagation: it is however proper to plant both in ſpring and autumn.

Prepare for the choicer ſorts four-feet beds of light earth, as aforeſaid, by good digging, breaking the earth fine, but not ſift any part thereof, laying them of a rounding form, and rake the ſurface ſmooth, then plant the roots in rows lengthwiſe the beds, either by drilling them in two inches deep and ſix inches diſtance in the row, and the rows ſix or eight aſunder, or may plant them by bedding-in or by dibble-planting the ſame depth and diſtance. See PLANTING.

Thoſe deſigned for the borders ſhould be planted generally towards the ſpring in little clumps or patches, three, four, or five roots in each, putting them in either with a dibble or trowel two or three inches deep, and three or four aſunder in each patch, and the patches from about three to five or ten feet diſtance, placing them rather forward in the border.

As to their general culture after planting, obſerve in winter, that ſuch of the forward autumnal-planted roots of the choice ſorts in beds as have ſhot above ground, ſhould have occaſional ſhelter from hard froſts by mats ſupported on low hoop-arches; or in very ſevere weather may cover them cloſe with dry long litter, but remove all covering in open weather: and in the ſpring when the flower-buds begin firſt to advance, it will be of much advantage to ſhelter them in froſty nights with ſupported mats, ſuffering them however to be open to the full air every day; but the latter plantings that do not come up in winter or very early in ſpring whilſt froſty nights prevail, will not require any protection, and all thoſe diſtributed in patches about the borders muſt alſo take their chance in all weathers; thoſe of the different ſeaſons of planting will ſucceed one another in flowering from the beginning of April until the middle of June, though the May blow generally ſhews to the greateſt perfection.

After the blow is paſt and the leaves and ſtalks withered, take up the roots, and dry them in the ſhade, then clear them from all off ſets and adhering mould, and put them up in bags or boxes till next planting ſeaſons, when they muſt be planted again as before directed.

But in each ſeaſon of planting, it is highly neceſſary to plant them either in entire new beds, or the old refreſhed with ſome freſh rich earth or compoſt, working the old and new well together, this being neceſſary in order to invigorate the growth of the plants.

*Their Propagation.*

All the varieties of the *Aſiatic Ranunculus* propagate abundantly by off-ſets from the root, and new varieties are gained by ſeed.

By off-ſets.—The time for ſeparating the off-ſets is in ſummer when the flower is paſt, and the leaves and ſtalks are withered, then taking up all the roots in dry weather, ſeparate the off ſets from each main root, and after drying the whole gradually in ſome ſhady airy room, put them up in bags in the dry till the autumn and ſpring ſeaſons of planting, then plant them as before, placing all the off-ſets in ſeparate beds, many of them will blow the firſt year, but in the ſecond they will all flower in good perfection.

By ſeed.—Save a quantity of ſeed from the fineſt ſemi-double flowers, and ſow it either in Auguſt or in March or April, though

to ſave trouble of winter covering ſome prefer the ſpring; it ſhould be ſowed in light rich mould, either in pots or in an eaſt border, drawing very ſhallow flat drills five or ſix inches aſunder, in which ſow the ſeeds thinly, and cover them lightly with earth, giving frequent refreſhments of water in dry weather, and in a month or ſix weeks the plants will riſe with ſmall leaves; obſerving to continue the light waterings in dry weather to preſerve the ſoil moiſt during their ſummer's growth to encreaſe the ſize of the roots; and in June when the leaves decay, take up the roots and preſerve them till the ſeaſon for planting, then plant them in common beds, as before directed, and they will flower the ſpring following, when all the doubles of good properties ſhould be marked, and the ſingles thrown away.

*Culture of the other ſeven Sorts.*

All the other ſeven ſpecies of *Ranunculi* ſucceed in any common ſoil and ſituation, ſo may be diſperſed about the different flower compartments, where they may conſtantly remain, only trimming them occaſionally once in a year or two, or when they have encreaſed into large bunches they may be taken up in autumn or ſpring to divide them for farther encreaſe, and replant them again directly.

Their propagation is very eaſy, for they multiply exceedingly by the roots.

So that when intended to propagate them the roots may be ſlipped or parted in autumn when paſt flowering, or in the ſpring before they begin to ſhoot, and the ſlips may either be planted at once where they are to remain, or in nurſery rows for a ſeaſon, then planted out finally.

RAPHANUS, *Radiſh.*

The plants are herbaceous, annual, eſculents of the kitchen-garden, valuable for their eatable roots for ſpring and ſummer ſervice, having fuſiforme and globoſe roots in different varieties, broad rough leaves, and cruciforme flowers.

Claſs and order, *Tedradynamia Siliquoſa.*

*Characters.*] CALIX, four oblong, erect, deciduous leaves,——COROLLA, four heart-ſhaped, ſpreading, cruciforme petals, and four melliferous, glands,———STAMINA, four long and two ſhort filaments, having ſimple antheræ,—PISTILLUM, an oblong ventricoſe germen, ſcarcely any ſtyle, crowned by a capitated ſtigma,—PERICARPIUM, an oblong, gibbous, or ſwelling, ſmooth, bilocular pod, filled with roundiſh ſeeds.

This genus retains three ſpecies, one of which only, *Common Radiſh*, is for our purpoſe; obſerving, the botaniſts admit but of one ſpecies of this ſort, all the different ſorts of the taper-rooted and round Radiſh, both red, purple, white, and black ſorts, are ſuppoſed varieties only of the ſame ſpecies; and, indeed, we may often obſerve here and there ſome of all the varieties degenerate both in ſhape and colour; however by care in ſaving the ſeeds of the different ſorts ſeparate and diſtant from one another, the different varieties are continued diſtinct.

The ſpecies is,

*Raphanus Sativus.*

*Cultivated or common Garden Radiſh.*] Hath taper and round fleſhy roots, crowned by broad, rough leaves; and when they ſhoot for ſeed, ſend forth upright, ſtrong, widely, branching ſtalks, a yard or more high, having all the branches terminated by whitiſh cruciforme, light purpliſh flowers, ſucceeded by taper ſwelling pods with two cells.

The botanic diſtinction is, — *Raphanus* with taper, ſwelling, bilolucular pods.

*Varieties.*] All the varieties, though many of them appear as diſtinct ſpecies by the ſhape and colour of the root, yet as they all bear exactly the above ſpecific diſtinction in the ſeed-pod, they are conſidered all as varieties only of one another, belonging all to the ſpecies *Raphanus Sativus*, and the principal ſorts are the following, which may be divided into two claſſes,—Common taper-rooted Radiſhes,---and Turnep rooted kinds.

*Common Taper-rooted Kinds.*

*Short-topped Radiſh.*——Having an oblong taper, reddiſh purple root, ſome deep, others pale-coloured, crowned with only a ſmall ſhort top of leaves, which is a particular merit peculiar to this ſort, as the plants require both leſs room to grow, and the root ſwells faſter in proportion, attaining perfection much ſooner than the large-topped kinds, being alſo a firm, criſp, tender-eating Radiſh, ſo is preferable for general culture, both for all early crops in frames and borders, and for the general crops in the open quarters; the pale-rooted ſort is generally milder to eat than the deep red or purple kind.

This

This may be ſowed at different times, from October or November until May; but from January till March and April is the general ſowing ſeaſon, at two or three weeks intervals, for the main crops.

*Salmon-coloured Radiſh.*] Having a fine long, taper, pale-ſcarlet root, crowned generally with a pretty large top of leaves, but if allowed room, the root ſwells freely to a handſome ſize, and is a firm, criſp, excellent Radiſh for the later crops, ſowed in March, April, and May, in open ſituations.

*Variety.*] Short-topped early Salmon Radiſh.

*Long-topped Red Radiſh.*] Having an oblong, taper, red root, crowned with a large top of leaves;—not proper for general culture.

*Deep-red Radiſh.*] Having an oblong, taper, deep-red root, apt to become ſoon hot and ſticky; not proper for general culture.

*Sallad Radiſh.*] Any ſort of Radiſh may be uſed as ſuch, being ſowed thick like creſſes, and muſtard, to gather whilſt young in the ſeed leaf, to mix in ſallads; but ſeed of any of the common long-topped ſorts may be ſowed for this purpoſe. See SALLAD HERBS.

*Turnep-rooted Kinds.*

*Small White Turnep-rooted Italian Radiſh.*] Having a ſmall, round, turnep ſhaped, white root, being very like young Dutch turneps; and if uſed whilſt quite young, they eat very criſp, mild, and well taſted, and make an agreeable variety at table; are in higheſt perfection in April and May, or in autumn: ſow them in February, March, and April, for ſpring uſe; and end of July or beginning of Auguſt, for autumn eating.

This ſort is often brought to the London markets in the ſpring, about April and beginning of May, generally in bunches, and are often miſtaken for young turneps.

*Large, white, Turnep-rooted Spaniſh Radiſh.*] Having a moderately-large, round, orbicular, turnep-ſhaped, white root, eſteemed chiefly for autumn eating, and early part of winter; ſowing them in July and beginning of Auguſt.

*Black Turnep-rooted Spaniſh Radiſh.*] Hath a large, roundiſh oblong, black-coated root, but white within, greatly eſteemed by many for autumn and winter eating, either alone or ſliced in ſallads: ſow them in open ground in July and beginning of Auguſt, they will come in for uſe in September and October, and continue in perfection all winter.

All theſe varieties of *Raphanus Sativus* are annual plants, which being ſowed in the ſpring attain perfection in two or three months, and ſhoot up ſoon after into ſtalk for flower and ſeed, which, ripening in autumn, the whole plant, root, and top periſhes; ſo that a freſh ſupply muſt be raiſed annually from ſeed in the ſpring, performing the ſowings at ſeveral different times, from about Chriſtmas until May, in order to continue a regular ſucceſſion of young tender Radiſhes throughout the ſeaſon; allowing only a fortnight or three weeks interval between the ſowings, for one crop will not continue good longer than that ſpace of time, before they will either run to ſeed, or become tough, ſticky, and hot to eat.

They are all tolerably hardy, except very early raiſed plants in their infant ſtate, which are liable to ſuffer by froſt; and they all ſucceed in any common garden earth, and almoſt any ſituation and expoſure open to the ſun and free air; though for the early crops a warm ſouth border, or other ſheltered ſunny ſituation, is proper, both to bring the crop forwarder, and for protecting the plants from cold, as being impatient of froſt whilſt young, as aboveſaid; therefore when they riſe early it is proper to cover them in froſty nights with ſtraw or mats; but the main crops ſowed in February and March, &c. may be in any open ſituation, as they want no protection.

*Culture of the common Spindle-rooted Radiſh.*

To have Radiſhes as early as poſſible, they are ſowed both on warm borders and in hotbeds, under frames and lights.

But firſt of their culture in the open ground. To have early Radiſhes in warm borders, you may begin ſowing a few ſhort-topped Radiſh in October, November, and December, but not any general early ſowing till about Chriſtmas, or early in January, if the weather is open; or in cold wet grounds not till the end of that month or beginning of February; for the very forward ſowings performed before the middle or end of December, are not to be depended on, though ſuch of them as ſurvive the winter's froſt, will be fit to draw ſometimes in January and February; they however will be hard and ſticky; but as they may be deemed a great rarity at a very early ſeaſon, and as the ſeed is cheap enough, and

a ſmall ſpace of ground will be ſufficient, it may be worth the trial to ſow ſome in the middle or end of October, and a few more in November and December, and let them take their chance of the winter; and if they ſhould fail, the ſame ground will do to ſow again time enough for a good ſpring crop. However, for the general early crop, the end of December, or the beginning or middle of January, according to the temperature of the ſeaſon, is time enough to begin, when, if open weather, it is proper to think of ſowing a good crop in a warm dry border, or any warm-lying light ground; and about the end of January, or beginning of February, ſow a more general crop.

Let the ground for the reception of the ſeed be trenched one good ſpade deep at leaſt; or it will be of advantage, if it has been previouſly trenched up in ridges, then levelled down, the clods well broken, and the ſurface laid even.

Then being provided with ſome good ſhort-topped Radiſh-ſeed, and with which, if you think proper, you may mix a ſprinkling of coſs-lettuce and carrots, they will come in for uſe after the Radiſhes, and be ſome weeks earlier than the main crops. Sow the whole together broad-caſt all over the ſurface tolerably thick in the early ſowings, and rake them well in with a large rake; or, if in a large open plat of ground, or where the ground is rather wettiſh or ſtiff, it is proper, for the early ſowings in particular, to divide it into four or five-feet wide beds, with foot and a half wide alleys between; then ſowing the ſeed, ſtrike it a little in with the teeth of the rake, and then caſt ſome earth of the alleys over them half an inch deep, and rake it ſmooth.

The London kitchen-gardeners, after performing the main early ſowings from about Chriſtmas till the beginning of February, generally cover the ground directly with clean wheat-ſtraw, about two inches thick, both to keep the ſurface warm, and keep off birds from the ſeed, ſuffering it to remain till the plants are fairly come up, as it contributes to their more early riſing, and is then raked off lightly every mild day.

However, covering theſe early crops is very eligible, when the plants come up, every froſty night; for this purpoſe have either a quantity of dry wheat-ſtraw, or dried fern, &c. laying it ready in the alleys, and every night, when there is an appearance of froſt, throw it over the plants with a pitchfork, two inches thick or more, if the weather ſhould prove ſevere, and rake it off lightly every mild morning with a wooden rake; but in ſevere weather muſt remain night and day: and this covering, if carefully ſpread on and taken off, will no ways bruiſe the plants, but will not only protect them from the froſt, but continue them greatly forward in their growth. But inſtead of ſtraw ſome uſe large garden-mats, eſpecially after the plants are up, and a little advanced, generally ſticking two or three rows of ſtout wooden pegs along the border or beds, in a ſlanting manner, two or three inches above ground, to ſupport the mats from the plants, or where there is only a ſmall quantity, you may arch the beds with hoops for the ſupport of the mats.

The above work of covering early Radiſhes, may to ſome appear tedious and troubleſome, but it is ſoon done when every thing is laid ready, and is univerſally practiſed by the London gardeners, to large tracts of ground, continuing it till the plants are fairly in the rough leaf, and firmly rooted; for the early quite young plants, being not only liable to be greatly cut at top by the froſt, but even thoſe expoſed thereto and ſeemingly ſurvive, are often ſtarted at the root; that is, the froſt heaving the ground, it draws the plants up along with it, and breaks the tender radicle or lower perpendicular fibre, which not only retards their growth till they form new fibres, but the terminal downright fibre being broken off, prevents their ſhooting in length, that they can never form handſome Radiſhes, but become what the market gardeners call chumps: ſo thoſe gardeners who raiſe large quantities for the ſupply of the London markets, find their account in allowing the early main crops occaſional protection, which by inſuring fuller crops coming in earlier and in greater perfection, always pay them ſufficiently for the trouble of covering.

When the Radiſhes however are a little advanced in growth, being in the rough leaf, it is proper to thin them, where they ſtand too thick, to two inches diſtance, which, as you will begin drawing them for uſe when quite young, may be room enough at preſent, as the daily thinning for the table or market will give them more and more room every day.

In very dry weather, in March and April, it is adviſeable to give them a good watering every evening or morning, which will both

forward

ward their growth conſiderably, increaſe the ſize of the root, and render them more criſp and mild to eat.

Continue repeating the ſowings every fortnight or three weeks, till March, then ſow every fortnight until the end of April; or where a long ſucceſſion of young Radiſhes is required, the ſowings may be continued all May, or even during the ſummer, until the middle or end of Auguſt, if required; thoſe ſowed in July and Auguſt will be very fine in September and October; obſerving in ſowing the latter crops of Radiſhes, from the middle of February during the reſt of the ſowing ſeaſon, they may be ſowed in any open ground, and want no covering in any weather; and in the main crops of Radiſhes, if neceſſary to make the moſt of your ground, you may mix a ſprinkling of coſs-lettuce and round-leaved ſpinach ſeed, ſowing the whole together broad-caſt, and rake them in evenly with a large rake as aforeſaid; the three crops will be coming forward all at the ſame time, without interruption to one another; the Radiſhes come in firſt, then, after theſe are drawn off, the ſpinach flouriſhes, and ſoon becomes fit for uſe, which is ſucceeded by the lettuce; and between theſe may ſow pickling cucumbers or kidney beans, &c. in the beginning of June.

But in ſowing the main general crops of Radiſhes in the open quarters, the market gardeners generally ſow them on the ſame ground where they plant out their main crops of cauliflowers and cabbages, mixing ſpinach with the Radiſh ſeed, as above ſaid, ſowing the ſeeds firſt, and rake them in, then plant the cauliflowers or cabbages; the Radiſhes and ſpinach come in for uſe before the other plants begin to ſpread much, and as ſoon as thoſe ſmall crops are all cleared off for uſe, then hoe the ground all over to kill weeds and looſen the ſoil, and draw earth about the ſtems of the cauliflowers and cabbages.

With regard to the culture of theſe general crops of Radiſhes, they require very little, which is occaſional thinning where they are too thick, performing this when the plants are come into the rough leaf, either by hoe or drawing them out by hand; though for large quantities, ſmall-hoeing is the moſt expeditious mode of thinning, as well as prove very beneficial to the crop by looſening the ground; however, in either method thin the plants to about three inches diſtance, clearing out the weakeſt, and leave the ſtrongeſt to form the crop.

Early crops in hot-beds, &c.—When it is required to have young Radiſhes as early in the ſpring as poſſible, they may be greatly forwarded by aid of hot-beds under frames and glaſſes, or other ſhelters.

This work may be begun any time in winter, if thought proper; but from Chriſtmas till Candlemas is the moſt eligible ſeaſon to enſure a thriving crop. Make a hot-bed for one or more three-light frames, about eighteen inches depth of dung, which is ſufficient, as the heat is only intended juſt to bring up the plants, and ſet them a-going a little at firſt; put on the frame directly, and earth the bed ſix or ſeven inches deep with light rich mould; then having the true ſhort-topped Radiſh-ſeed, ſow it on the ſurface of the bed moderately thick, and cover it evenly half an inch thick with light mould, and put on the lights, and the plants will come up in a week, or probably in leſs time, if there is a tolerable warmth in the bed; obſerving, when they appear, to admit air every day, either by tilting the lights conſiderably in the front or behind, according to the temperature of the weather, or in fine mild days take them quite off; for a large portion of freſh air is neceſſary every day, otherwiſe the plants will draw up to ſhank, and go off; remarking, that after the plants have had a week or fortnight's growth, they ſhould be thinned where they have riſen too thick, leaving them about an inch and a half apart; then obſerving, if the plants have unavoidably drawn up with long ſhanks, it is adviſeable to ſift ſome light mould out of a fine ſieve in amongſt them evenly all over the bed, ſo as to mould their ſhanks about half an inch or an inch, or more thick, as there ſhall be occaſion: this will greatly ſtrengthen their growth, and promote the goodneſs of the roots; ſtill remembering to indulge them with a large portion of freſh air every mild day, and cover them on nights; thus the plants will advance faſt to perfection, and be fit to draw in ſix weeks.

But in want of frames and glaſſes for the above purpoſe, you may cover occaſionally with mats, making the hot-bed as before, and mould it the ſame depth, ſecuring the ſides of the mould with boards or wreaths of ſtraw-bands; then cradle or arch it over with hoops or rods for the ſupport of the

mats, which muſt be uſed every night and all bad weather, till the plants are ready for uſe.

Or in caſe of ſcarcity of dung for making hot-beds as above, you may ſow ſome ſeed in beds of common earth under garden frames, and put on the lights every night and all bad weather; and thus you may raiſe the plants for uſe ſooner by a fortnight than in the common open borders.

*Culture of the Turnep-rooted Kinds.*

As to the turnep-rooted Radiſhes, they ſhould always be ſowed in ſome open ſituation and light ground.

The ſmall round ſort may be ſowed in ſpring, in February, March, or beginning of April; or for autumn uſe, ſow them in July and beginning or middle of Auguſt: at either ſeaſon ſow them broad-caſt thinly, and rake them in evenly, and when the plants come up and get into the rough leaf, they muſt be thinned either by hoe or hand, ſetting them out four or five inches aſunder.

The other two large turnep-rooted kinds ſhould be ſowed principally in autumn, about the middle or end of July, in any open ſituation thinly, and raked in; and when the plants have got rough leaves about an inch broad, hoe them out to ſix or eight inches diſtance, they will attain full growth for uſe in September and October, and continue good great part of winter, particularly the black ſort; however, it is proper to take up a quantity in November or December, before attacked by ſevere froſty weather, and depoſiting them in any ſheltered place in ſand, they may be kept in good perfection till the ſpring.

*Saving Seed of all the Sorts.*

To ſave Radiſh-ſeed, you may either leave ſome plants of the firſt main crops to run up, or tranſplant a quantity into an open ſpot of ground; the latter is more particularly to be recommended for general practice, becauſe, by drawing up the roots for planting, you can judge of the goodneſs in reſpect to ſhape and colour; they ſhould be planted in an open ſituation.

The proper ſeaſon therefore for planting out Radiſhes for ſeed is the beginning or towards the middle of May, juſt when the roots are in their prime, chuſing ſhowery weather if poſſible.

Obſerve of the common taper-rooted Radiſhes to ſelect them with the ſhorteſt tops, and the longeſt ſtraight roots of the beſt colours in the reſpective varieties, remarking particularly of the ſhort-topped kind, to chuſe them always with the very ſmalleſt tops, and as of this ſort there being ſome with roots of a deep reddiſh-purple colour, and others having pale-coloured clear roots, the latter of which are generally more criſp and mild than the former, and are particularly eſteemed about London; ſo that in drawing them to plant for ſeed, you ſhould keep them ſeparate, obſerving alſo the ſame of the other varieties: then havingpreviouſly digged an open ſpace of ground for their reception, plant the Radiſhes, with their leaves entire, by a dibble, in rows two feet and a half aſunder, and the ſame diſtance in the lines, placing them in the quincunx order, and each root down to its leaves, directly giving them a good watering, to ſettle the earth cloſe about the roots, and forward their ſtriking, repeating the waterings in dry weather till they have taken freſh root, and ſhew ſigns of growth.

As to the turnep-rooted kinds, ſome ſhould be ſowed in the ſpring, about March, purpoſely for ſeed, and may either remain where ſowed, hoeing them out to wide diſtances, or when the roots are arrived to perfection in May or beginning of June, a quantity may be tranſplanted, chooſing the roundeſt, beſt-ſhaped, faireſt root, and planted in rows two feet and a half aſunder, as before obſerved, and water them.

Obſerve however if any of the large turnep rooted kinds of the autumn crops ſhould ſtand the winter, ſome may be left, or planted out for ſeed in February.

All the ſorts will ſoon take root, and ſhoot up to ſtalk in June, branch widely every way, flower in July, and the ſeed will ripen in September.

Their ripening is diſcovered by the pods and ſeeds changing brown; then cut up the ſtalks, and ſpread them in the ſun a week or two to dry and harden the pods and ſeeds, and then threſh them out; obſerving the ſeed-pods being of a tough nature, they do not readily break to diſcharge the ſeed, ſo that ſometimes they require to be expoſed to the weather ſome conſiderable time, to render the huſks brittle, and ſometimes they require to be threſhed two or three times over; when they however are threſhed out, clean the ſeed from the rubbiſh, and put it up in bags out of the way of mice.

## REED HEDGES.

Reed Hedges are temporary internal fences made with dried Reeds, which may be had cheap enough all over the kingdom, and may be expeditiouſly formed into Hedges by the aſſiſtance of poſts and railing, and make a cheap temporary fence of great utility for occaſional uſe in gardens, to incloſe particular internal ſpaces of ground, to afford ſhelter to certain ſeedling plants, both in nurſeries and large kitchen gardens.

But Reed Hedges are particularly uſeful in nurſeries, to form places of ſhelter for many ſorts of ſeedling trees and ſhrubs, &c. which being tender whilſt young, require the ſhelter of a fence in winter to break off the keen edge of cutting blaſts two or three years, till they gradually gather ſtrength and a greater degree of hardineſs; theſe kind of fences are alſo uſeful in nurſeries for training ſeveral ſorts of wall fruit-trees againſt, to form them for walls in gardens, being what the nurſerymen call *Trained Trees*; ſo that theſe Reed fences being cheap and ſoon formed, are often uſed in the nurſeries for a double purpoſe, that is, ſerving both for ſhelter, and affording an opportunity of planting trees againſt each ſide eight or ten feet aſunder, for the purpoſe of training for walls as aforeſaid. See NURSERY, &c.

Likewiſe in large open kitchen gardens Reed Hedges are often employed to good advantage for ſheltering tender plants and early crops: ſuch as incloſing particular ſpaces for a melonary, or place wherein to raiſe early melons and cucumbers, and often as croſs internal fences, running acroſs the ground at conſiderable diſtances, under which forming warm borders for the purpoſe of raiſing various early crops of eſculents more plentifully; ſerving alſo to break the force of cutting and tempeſtuous winds from the crops in the adjacent quarters, and for which purpoſes many of the kitchen-gardeners about London uſe theſe kind of Hedges.

Remark however, theſe Reed Hedges are not at all adapted for outward fences, as they may be very eaſily broke through.

But as internal fences for ſheltering plants, they are accounted better than walls or pales, becauſe the Reeds generally deaden the winds without reverberating them back again.

The proper Reeds for making theſe fences are the dried ſtems of the *Arundo Phragmitis*, or Common Marſh Reed, which, growing in great abundance by river ſides, lakes, and marſhy places all over the kingdom, furniſh a crop of ſtems annually fit to cut in autumn, and being then bound in bundles, are ſtacked up or houſed to remain for uſe; and great quantities are annually brought to London by water, and depoſited in warehouſes near the river, where they have great demand for them among the gardeners for making Reed fences.

As to the method of making theſe fences, they are ſometimes erected in fixed ranges, and ſometimes formed into moveable pannels. When to be formed into fixed fences, arrange ſome ſtout poſts ſix or eight feet aſunder, and five or ſix high, and from poſt to poſt carry two or three ranges of flat thin railing, one range near the bottom, another near the top, and a third in the middle; againſt this railing place the reeds two or three inches thick, having other railing fixed directly oppoſite, ſo that the Reeds being placed all along between the double railing, the bottoms reſting either upon a plate of wood, or let into the ground, as may be convenient; and as ſoon as one pannel is placed, nail the railing as cloſe as poſſible, and either drive ſome long ſpike nails through each double railing, or bind them with ſtrong withy bands, but nailing is the beſt, in order to bring them as cloſe as may be, to ſecure the Reeds firmly in the proper poſition; and thus proceed till you have completed the range of fencing.

But when intended to have any of theſe fences formed into moveable pannels, to remove to different places occaſionally, a frame-work of railing is prepared as above, each pannel ſix or eight feet long, and the Reeds fixed therein as before directed; then whereſoever it is intended to place them, poſts muſt be ranged ſix or eight feet diſtance, to ſupport the ſeveral pannels.

## RESEDA, Baſtard Rocket, *Mignionette*, &c.

It conſiſts principally of herbaceous annuals, biennials, and perennials; ſome of the biennials in particular merit culture, one as an odoriferous garden plant, another for field culture, for the uſe of the dyers, &c. growing from one to three feet high, having oblong and lanceolate leaves, and terminated by ſpikes of ſmall unequal flowers.

Claſs and order, *Dodecandria Trigynia*.

*Characters.*] CALIX, is monophyllous, many-parted, and permanent. COROLLA, ſeveral ſmall, unequal, generally trifid petals, the upper being gibbous at the baſe, contain-

containing a honey juice, and a glandular, plane, erect nectarium at the upper ſide of the receptacle, between the ſtamina and upper petal, connivent with the baſe thereof. STAMINA, twelve or fifteen ſhort filaments, having obtuſe erect antheræ. PISTILLUM, a gibbous germen, three or more very ſhort ſtyles, having ſimple ſtigmas. PERICARPIUM, a gibbous, angular, unilocular capſule, with apertures between the ſtyles, having many kidney-ſhaped ſeeds adhering to the angles of the capſule.

There are many ſpecies, the moſt noted of which, for our purpoſe, are the two following, the firſt for the pleaſure-ground, the other for field culture.

'RESEDA *Odorata*—(*biennial* and *tender*.)

*Odoriferous Reſeda, commonly called Mignionette.*] Hath a tough fibrous root, ſending forth ſeveral weak branchy ſtalks, growing twelve or eighteen inches long, having oblong, entire, and trilobate leaves, and all the branches terminated by long ſpikes of greeniſh-white ſweet-ſcented flowers, having the calix equal with the petals.

This plant is biennial, is in high eſtimation for its agreeable fragrance, though is not ornamental neither in its growth nor flowers, but the latter impart a moſt delightful odour widely around, flowering in ſummer, continuing ſeveral months, even all winter, if ſheltered in a green-houſe, &c.

Is a native of Egypt; ſucceeds here in the open air in ſummer, but requires ſhelter in winter.

RESEDA *Luteola*—(*biennial* and *hardy*.)

*Luteola, or Yellow Herb, commonly called Weld, Wild Woad, or Dyer's Weed.*] Hath tough fibrous roots, crowned with long, narrow, ſpear-ſhaped, entire leaves, ſpreading on the ground, upright ſtems a yard high, garniſhed alſo with ſpear-ſhaped narrow leaves, and terminated by long looſe ſpikes of yellow flowers, having quadrifid cups; grows wild on old walls and the ſides of banks and ſterile places in England, &c. but is cultivated in fields for its flower-ſtems, for the uſe of the dyers.

Both theſe ſpecies are biennial plants, the firſt is ſomewhat tender, requiring ſhelter from froſt; but the ſecond is very hardy; obſerve however the firſt ſort may be deemed annual as well as biennial, for being ſowed early in ſpring, will flower and perfect ſeeds the ſame year, and totally periſh in winter, if not ſheltered; but being ſheltered all winter in a green-houſe, they will continue till next ſummer: the ſecond ſort however is perfectly biennial; for being ſowed one year, it does not run up to ſtalk till next ſummer, when it flowers and ripens ſeed, and wholly decays ſoon after.

*Method of Propagation.*

They are both raiſed from ſeed ſowed annually, the firſt ſort principally in a hot-bed, the other in the open ground.

The *Odoriferous Reſeda*, or *Mignionette*, ſhould be ſown in March or April, in any moderate hot-bed, as directed for tender annuals, ſowing ſome in ſmall pots to remain, and ſome for tranſplantation into the full ground, in the end of May or June; however, whilſt they remain in the hot-bed, indulge them with freſh air daily, and occaſional waterings in common with the other plants; and if ſome were pricked upon a freſh hot-bed, or into ſmall pots, three plants in each, and plunged in the hot-bed, it will forward them conſiderably: in the end of May or in June, according to the ſtrength of the plants and temperature of the ſeaſon, taking opportunity of mild moiſt weather, remove them into the full air, retaining ſome in pots, others tranſplant with balls into the borders, obſerving, when the ſtalks of the plants advance, to place ſhort ſticks for their ſupport, and to which tie the ſtems in a neat manner.

But the ſeed of this plant will alſo grow in the full ground, ſowed in the middle of April and in May, when the ſeaſon is become warm and ſettled, ſowing them in light earth, either in a bed by themſelves, and raked in lightly, or in patches about the flower-borders, covering them a quarter of an inch deep; and in either method ſuffer the plants to remain where raiſed, giving occaſional waterings.

And if ſome plants are raiſed in pots in May, or any time in ſummer, or towards autumn, and the pots plunged in an eaſt border, or where they may have only the morning ſun, well watered all ſummer, and in October placed in a green-houſe, they will ſtand the winter, and ſome of them raiſed forward in the ſummer, will flower all the winter ſeaſon, others raiſed towards autumn, will continue increaſing in growth, and flower ſtrong early next ſpring and ſummer.

They ripen ſeeds in September, when they ſhould be carefully gathered in dry weather.

The

The culture of the Weld, or Wild Woad, is generally in large quantities in fields, and thrives in any poor land, though it will conſequently be more proſperous in a rich ſoil; the beginning of Auguſt is the beſt ſeaſon for ſowing it, allowing about one gallon to an acre, and ſow it broad caſt evenly, and harrow it in; the plants will ſoon come up the ſame ſeaſon, and when they are a little advanced in growth, hoe them to thin the crop and kill weeds, leaving the plants ſix inches aſunder; they will ſhoot up into ſtalk next ſpring, and flower in June, at which time the plants ſhould be pulled for uſe, laid to dry, then tied in bundles and houſed.

A quantity of the plants ſhould be ſuffered to ſtand every year for ſeed.

RHAMNUS, (*Cerva ſpina*) Buckthorn.

The plants are of the tree and ſhrub kind, compriſing ſeveral deciduous and evergreen ſpecies for adorning the pleaſure-ground and green-houſe collection, garniſhed with oval and oblong leaves, and ſmall infundibuliforme flowers moſtly in bunches, ſucceeded by ſmall round berries.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX, none. COROLLA, is monopetalous, funnel-ſhaped, four or five-parted, and ſpreading, having a ſmall ſcale at the baſe of each diviſion. STAMINA, five, or generally as many filaments as there are diviſions in the corolla, inſerted under the ſquamulæ or ſcale of the petal, and terminated by ſmall antheræ. PISTILLUM, a roundiſh germen, filiforme ſtyle, crowned by an obtuſe ſtigma, and divided into fewer ſegments than the corolla. PERICARPIUM, a round naked berry of three or four cells, having the like number of roundiſh hard ſeeds.

Late improvements in botany have ranged ſeveral genera of former authors as ſpecies only of this genus, ſuch as the *Frangula*, or Berry-bearing Alder,—*Paliurus*, or Chriſt's Thorn,—*Alaternus*,—and *Zizyphus*, or Jujub-tree; all of which bearing the *characters* exactly of *Rhamnus*, are to be now conſidered as ſpecies of that genus.

They conſiſt of deciduous and evergreen kinds, moſtly of hardy growth, and ſome of tender quality.

*Hardy deciduous Kinds.*

Under this head is compriſed the common Buckthorn, *Frangula*, and *Paliurus*.

[1]RHAMNUS *Catharticus.*

*Cathartic, or Common Purging Buckthorn.*] Grows twelve or fourteen feet high, branching numerous and irregularly, ſmooth, and armed with ſharp ſpines, oval, ſpear-ſhaped, ſawed, ſmalliſh leaves, on long foot-ſtalks, and at the ſides of the branches cluſters of ſmall, quadrifid, dioeceous, greeniſh flowers, ſucceeded by black berries in autumn, having four ſeeds.

*Varieties.*] Dwarf Buckthorn, growing about a yard high—Dwarf long-leaved Buckthorn, growing five or ſix feet high.

The common ſort grows wild in hedges in many parts of England, but is admitted for variety in the ſhrubbery plantations; the berries of it are uſed in medicine, being made into a ſyrup, good for many diſorders, given as a cathartic or purge, ſaid to be good to purge watery humours, and againſt the dropſy, jaundice, itch, and all eruptions of the ſkin, &c.

[2]RHAMNUS *Frangula.*

*Frangula, or Common Berry-bearing Alder.*] Riſes with a woody ſtem, branching numerouſly ten or twelve feet high, without thorns; oval-ſpear-ſhaped, entire leaves, two inches long; and ſmall, monogynious, hermaphrodite, greeniſh flowers, terminating the ſhoots in cluſters, ſucceeded by round berries, ripening to a black colour in autumn, having generally but two or three ſeeds.

*Varieties.*] Dwarf Berry-bearing Alder, growing two or three feet high——Dwarf long-leaved.

The common ſort is an inhabitant of our woods in many parts of England, but has been long admitted in garden plantations, to increaſe the variety of hardy deciduous ſhrubs.

[3]RHAMNUS *Alpinus.*

*Alpine rough-leaved Berry-bearing Alder.*] Riſes with a woody ſtem, branching numerouſly twelve or fourteen feet high, without thorns; larger oval-ſpear-ſhaped rough leaves, doubly crenated; and dioeceous flowers.

*Variety* ] Smooth-leaved Alpine *Frangula.*

[4]RHAMNUS *Paliurus*, (*Spina Chriſti*).

*Paliurus, or Chriſt's Thorn.*] Riſes with a ſhrubby ſtem, branching ten or twelve feet high, having numerous weak pliant branches, armed with ſharp thorns by pairs, at every joint, having the lower one reflexed; oval leaves alternately, near an inch long, and trigynous yelloviſh flowers in cluſters at the axillas of the branches, ſucceeded by ſmall, roundiſh,

roundiſh, compreſſed berries, ſurrounded by a membraneous border.

It grows naturally in Paleſtine; alſo in Spain, Portugal, and ſome parts of France, and is retained here in our ſhrubberies as a curioſity; as being ſuppoſed to be the plant of which the crown of thorns was compoſed, to place on the head of our Bleſſed Saviour at his crucifixion, the probability of which is ſupported by accounts of ſome travellers, by obſerving that the ſhrub grows naturally in great plenty about Jeruſalem and in Judea.

All the above deciduous ſpecies flower about June, but the flowers are not ornamental, being ſmall and moſtly of a greeniſh colour, which in the firſt three ſpecies are ſucceeded by abundance of berries in autumn, effecting a tolerable variety; but the *Paliurus* rarely ripens its berries in England.

They are all hardy ſhrubs, and will proſper in any common ſoil, and may be planted to increaſe the variety of the ſhrubbery and other hardy plantations.

They are propagated by ſeed and by layers, and ſometimes by cuttings.

By Seed.—In autumn, or as ſoon as the ſeeds can be procured after they are ripe, ſow them in light earth, covering them near an inch deep; they ſometimes riſe the ſpring following, if ſowed early in autumn, otherwiſe are apt to remain a year longer in the ground; when however the plants are a year or two old, plant them out in nurſery-rows, to have two or three years growth, and then may be planted out finally.

By Layers.—Chuſe the young ſhoots in autumn, and give them either a little twiſt or nick in the bark at a joint, then lay them in the uſual way, they will be rooted in one year.

By Cuttings.—The firſt three ſorts in particular grow by this method; chuſe the young twigs for cuttings in autumn, and plant them in rows, moſt of them will ſtrike.

*Evergreen Kinds.*

Of theſe ſorts there is but one ſpecies common to our gardens, which was formerly a diſtinct genus (*Alaternus*), but now a ſpecies of *Rhamnus*, and comprehends ſeveral varieties——all beautiful, hardy, evergreen ſhrubs.

5 RHAMNUS *Alaternus.*

*Alaternus.*] Riſes with a ſhrubby upright ſtem, branching numerouſly all the way from the bottom, from four or five to twelve or fifteen feet high, the branches having a ſmooth, greeniſh, and reddiſh bark, cloſely garniſhed with oval, ſtiff, ſhining green, ſerrated leaves, placed alternately, and at the axillas dioeceous greeniſh flowers in cluſters, with three-parted ſtigmas, ſucceeded by round ſoft berries in autumn, having three ſeeds.

It is a native of the ſouthern parts of Europe.

*Varieties.*] Large-growing Alaternus—— Small-growing Alaternus—Broad leaved Alaternus—Narrow jagged-leaved Alaternus —Gold ſtriped-leaved—Silver ſtriped-leaved —Blotched-leaved—Yellow-ſtriped jagged-leaved—White-ſtriped, jagged-leaved—All of which are evergreen ſhrubs, varieties of the ſame ſpecies, and of hardy growth, ſucceeding in any common ſoil in the open ſhrubberies and other plantations, and exhibit a very ornamental appearance the year round.

This ſpecies and the *Phillyrea* bearing a great external reſemblance, are often miſtaken for one another, but the *Alaternus* in all its varieties have the leaves placed alternately, and the *Phillyrea* in pairs oppoſite, ſo that there is a very obvious diſtinction, beſides being of different genera by the *characters* of their flowers and fruit. See PHYLLYREA.

All the varieties of the *Alaternus* are very ornamental evergreens for adorning the ſhrubbery and wilderneſs compartments, and if the plain green ſorts and variegated kinds are intermixed in aſſemblage with other evergreens, they will effect a very diſtinguiſhable variety at all ſeaſons: theſe plants were alſo formerly uſed for ornamental hedges, and at preſent are often employed to form hedges as blinds to hide any naked wall, or other diſagreeable ſence, &c. in fore-courts and other conſpicuous places contiguous to the dwelling; the variegated kinds being moſtly uſed for this purpoſe, or the green and ſtriped ſorts intermixed, which being planted cloſe againſt the fence, two or three feet aſunder, and their branches nailed thereto, they will ſoon cover it effectually.

They are propagated by ſeed and by layers; the plain green ſorts may be raiſed by both methods, but the variegated ſort by layers only.

By Seed.—The berries ripening abundantly in September or early part of October, ſhould be gathered and ſowed as ſoon after as poſſible, otherwiſe they will hardly come up till

till the ſecond ſpring. Sow them in beds of light mould an inch deep, they will probably ſome come up in the ſpring; but if not, keep the beds weeded and they will all come up the ſpring following; which, after having two years growth, tranſplant them in March in nurſery rows, to remain till wanted for the ſhrubbery, &c.

By Layers—All the ſorts may be raiſed this way, which is the only certain method to continue the variegated ſorts. Chuſe the young ſhoots of the year in autumn, give them a ſlit at a joint, and lay them, they will be moſt of them well rooted by the autumn following; then take them off and plant them in the nurſery way, to have two or three years growth.

*Green-houſe and Stove Kinds*

Conſiſt principally of ſome ſpecies of *Zizyphus*, formerly a genus of itſelf, but now ranged in the family of *Rhamnus*; and the following are cultivated in ſome gardens for variety.

The two firſt are green-houſe plants and the other two for the ſtove.

[6]RHAMNUS *Zizyphus.*

*Common Zizyphus, or Jujube tree.*] Riſes with a woody ſtem, branching irregularly eight or ten feet high, armed with ſtrait prickles by pairs; oval, oblong, ſmooth leaves, and ſmall digynous cloſe-ſitting yellow flowers, ſucceeded by large oval berries.

[7]RHAMNUS *Jujuba.*

*Indian Jujube Tree.*] Riſes with a ſhrubby ſtem, branching eight or ten feet high, armed with ſolitary or ſingly-placed recurved ſpines, roundiſh retuſe leaves, downy underneath, and aggregate pedunculi ſupporting ſmall, ſemi-digynous, yellowiſh flowers, ſucceeded by large round berries.

[8]RHAMNUS *Spina Chriſti.*

*Spina Chriſti, or Æthiopian Jujube.*] Riſes with ſhrubby ſtems dividing into ſlender branches, armed with ſtrait ſharp ſpines by pairs; oval leaves, and ſmall yellowiſh flowers.

[9]RHAMNUS *Oenoplia.*

*Oenoplia, or Ceylon Jujube.*] Riſes with a with a woody ſtem, branching eight or ten feet high, armed with ſolitary recurved ſpines; roundiſh heart-ſhaped leaves, and aggregate almoſt cloſe-ſitting pedunculi ſupporting yellowiſh flowers.

Of the above four kinds, the two firſt are for the green-houſe collection, the other two for the ſtove; ſo muſt always be kept in pots, and placed among the plants of thoſe departments.

They are propagated by ſowing the ſtones of the fruit in pots, and plunged in a hot-bed.

Likewiſe by ſuckers from the root and by layers.

RHEUM, Rhubarb.

The plants are luxuriant herbaceous perennials, of tall upright growth; for variety in gardens and medical purpoſes; having very thick, fleſhy, branched roots; crowned with ſingularly large, ſimple, roundiſh foliage, one or two feet in length and breadth; and ſtrong erect annual ſtalks, from about three to ſix or eight feet high, terminated by large ſpikes of numerous ſmall ſix-parted flowers.

Claſs and Order, *Enneandria Trigynia.*

*Characters.*] CALIX none. COROLLA is monopetalous, narrow at the baſe, and impervious, divided above into ſix parts, alternately ſmaller. STAMINA, nine capillary filaments inſerted into the corolla, and terminated by oblong didymous antheræ. PISTILLUM, a ſhort triquetrous germen, ſcarcely viſible ſtyles, and three reflexed plumoſe ſtigmas. PERICARPIUM, none, one large trequetrous, acute ſeed to each flower, having a membraneous border.

There are about five ſpecies, all herbaceous and of foreign growth, but grow freely here in the open ground. Are in great eſtimation as medical plants, the root being the uſeful part, which however in one or two ſorts is of ſuperior quality; one in particular, the *Rheum Palmatum* of *Linnæus*, is ſuperior to all the others.

[1] RHEUM *Rhaponticum.*

*Rhaponticum, or Common Rhubarb.*] Hath a large, thick, fleſhy, branching, deeply-ſtriking root, yellowiſh within; crowned by very large, roundiſh, heart-ſhaped, ſmooth leaves, on thick, ſlightly-furrowed foot-ſtalks: and an upright, ſtrong ſtem, two or three feet high, adorned with leaves ſingly, and terminated by thick cloſe ſpikes of white flowers.

It grows in Thrace and Scythia, but has been long in the Engliſh gardens; its root affords a gentle purge; is however of inferior quality to ſome of the following ſorts; but the plant being aſtringent, its young ſtalks in ſpring being cut and peeled, are uſed for tarts.

[2]RHEUM *Palmatum.* (Of *Linnæus.*)

*Palmated-leaved True Chineſe Rhubarb.*] Hath a thick fleſhy root, yellow within;

crowned with very large palmated leaves, being deeply divided into acuminated ſegments, expanded like an open hand; upright ſtems, five or ſix feet high or more, terminated by large ſpikes of flowers.

This is now proved to be the true foreign Rhubarb, the purgative quality of which is well known.

3 RHEUM *Compactum.*

*Tartarian Rhubarb.*] Hath a large, fleſhy, branched root, yellow within; crowned by very large heart-ſhaped, ſomewhat lobated, ſharply indented, ſmooth leaves; and an upright large ſtem, five or ſix feet high, garniſhed with leaves ſingly, and branching above; having all the branches terminated by nodding panicles of white flowers.

This has been ſuppoſed to be the true Rhubarb, which however though of ſuperior quality to ſome ſorts, is accounted inferior to the *Rheum Palmatum.*

4 RHEUM *Undulatum.*

*Undulated, or waved-leaved Chineſe Rhubarb.*] Hath a thick, branchy, deep-ſtriking root, yellow within; crowned with large oblong, undulate, ſomewhat hairy leaves, having equal foot-ſtalks, and an upright firm ſtem, four feet high, garniſhed with leaves ſingly, and terminated by long looſe ſpikes of white flowers.

5 RHEUM *Ribes.*

*Arabian Ribes, or Currant Rhubarb of Mount Libanus.*] Hath a thick fleſhy root, very broad leaves, full of granulated protuberances, and with equal foot-ſtalks; and upright firm ſtems, three or four feet, terminated by ſpikes of flowers, ſucceeded by berry-like ſeeds, being ſurrounded by a purple pulp.

All theſe plants are perennial in root, and the leaves and ſtalks are annual; the roots being thick, fleſhy, generally divided, ſtrike deep into the ground; of a browniſh colour without, and yellow within; the leaves riſe in the ſpring, generally come up in a large head folded together, gradually expanding themſelves; having thick foot-ſtalks, and grow from one to two feet or more in length and breadth, ſpreading all round; amidſt them riſe the flower-ſtems, which are garniſhed at each joint by one leaf, and are of ſtrong and expeditious growth, attaining their full height in June, when they flower; and are ſucceeded by large triangular ſeeds, ripening in Auguſt.

Some plants of each ſort merit culture in gardens for variety; they will effect a ſingularity with their luxuriant foliage, ſpikes, and flowers.

And as medical plants, they demand culture both for private and public uſe.

They are propagated by ſeeds ſowed in autumn ſoon after they are ripe, or early in the ſpring, in any open bed of light deep earth; remarking, thoſe intended for medical uſe ſhould generally be ſowed where they are to remain; that the roots being not diſturbed by removal, may grow large; ſcatter the ſeeds thinly, either by broad-caſt all over the ſurface, and raked well in; or in ſhallow drills a foot and half diſtance, covering them near an inch deep. The plants will riſe in the ſpring, but not flower till the ſecond or third year; when they however are come up two or three inches high, thin them to eight or ten inches, and clear out all weeds; though thoſe deſigned always to ſtand, ſhould afterwards be hoed out to a foot and a half or two feet diſtance; obſerving if any are required for the pleaſure ground, &c. for variety, they ſhould be tranſplanted where they are to remain in autumn, when their leaves decay; or early in ſpring before they ſhoot; the others remaining where ſowed, muſt have the ground kept clean between them; and in autumn when the leaves and ſtalks decay, cut them down, and ſlightly dig the ground between the rows of plants, repeating the ſame work every year.

The roots remaining, they encreaſe in ſize annually; and in the ſecond or third year many of them will ſhoot up ſtalks, flower, and perfect ſeeds; and in three or four years the roots will be arrived to a large ſize; though older roots are generally preferable for medical uſe.

RHEXIA, *Rhexia.*

Conſiſts of hardy herbaceous perennials for the pleaſure-ground, riſing with ſtalks a foot high, garniſhed with ſpear-ſhaped leaves, and terminated by tetrapetalous, ſpreading, red flowers.

Claſs and Order, *Octandria Monogynia.*

*Characters.*] CALIX is monophyllous, tubular, ventricoſe below, four parted above, and permanent. COROLLA, four roundiſh patent petals. STAMINA, eight ſlender filaments inſerted in the calix, having declinated linear obtuſe verſatile antheræ. PISTILLUM, a roundiſh germen, ſimple ſtyle, and oblong thick ſtigma. PERICARPIUM, a roundiſh quadrilocular quadrivalved capſule, in the belly of the calix, having numerous roundiſh ſeeds.

There

There are three ſpecies, thoſe of our gardens are the two following: both of America.

[1]RHEXIA *Virginica.*

*Virginia Rhexia.*] Riſes with an erect tetragonous ſtalk above a foot high, garniſhed with ſpear-ſhaped, ſerrated, ſeſſile, oppoſite leaves; and the ſtalks terminated by forked pedunculi, crowned with red flowers, having ſmooth cups.

[2]RHEXIA *Mariana.*

*Maryland Rhexia.*] Riſes with erect ſtalks, ten or twelve inches high; having ſpear-ſhaped, ciliated oppoſite leaves, and the ſtalks terminated by pedunculi, crowned with red flowers.

They both flower in June, but rarely ripen ſeeds here.

Theſe perennials ſucceed here in the open ground all the year, in a dry ſheltered place, though it is proper to keep ſome alſo in pots, to have ſhelter in very ſevere froſts.

They are propagated by ſeed ſowed in autumn, or ſpring, in pots, to be ſheltered from froſt; or if placed on a hot-bed in March, it will forward their growth; and when the plants are two or three inches high, plant them out.

RHODIOLA, Roſe-root.

It is a low, herbaceous, ſucculent, odoriferous perennial, for variety in the pleaſure-ground, having ſucculent leaves and ſtalks, and tetrapetalous dioeceous flowers.

Claſs and Order, *Dioecia Octandria.*

*Characters.*] CALIX, male and female flowers on ſeparate plants, having monophyllous erect, four-parted, permanent cups. COROLLA, in the males, four oblong obtuſe petals longer than the calix and deciduous; with four erect nectariums, ſhorter than the calix; and in the females, four obtuſe petals, equal with the calix and permanent, with three or four nectariums like the males. STAMINA, eight ſubulate filaments longer than the corolla, having ſimple antheræ. PISTILLUM, four oblong acuminated germens, ſtraight ſimple ſtyles, having obtuſe ſtigmas. PERICARPIUM, four corniculate capſules opening in the inner ſide, and many roundiſh ſeeds.

There is only one ſpecies, grows wild on mountainous parts in England, &c. but has been long a reſident of gardens, viz.

RHODIOLA *Roſea.*

*Rhodiola, or Roſe-root.*] Hath a fleſhy, thick, knotty root, emitting an odour like roſes; ſending up annually erect ſucculent ſtalks, eight or ten inches high, garniſhed with numerous, oblong, thick, ſucculent, ſerrated leaves, alternately; and terminated by cluſters of yellowiſh green flowers.

It flowers in June, and the ſeeds ripen in autumn.

This plant delights in a dry ſoil, and may be planted in any of the common borders, where it will abide for years.

It is propagated both by parting the roots in autumn or ſpring, and by cuttings of the ſtalks, which being cut off early in the ſummer, laid in a room a week to dry the ſucculency of the cut; then plant them in a ſhady border, and if covered cloſe with a hand-glaſs, they will ſtrike in leſs than two months.

RHODODENDRON, Dwarf Roſe-bay.

It compriſes deciduous and evergreen ſhrubs for hardy plantations, garniſhed with lanceolate and oval leaves, and wheel and funnel-ſhaped flowers in cluſters at the ends of the branches.

Claſs and Order, *Decandria Monogynia.*

*Characters.*] CALIX, is five-parted and permanent. COROLLA, is monopetalous, wheel or funnel-ſhaped, five parted, and ſpreading at top. STAMINA, ten declinated filiforme filaments, having oval antheræ. PISTILLUM, a pentagonous retuſe germen, ſlender ſtyle, and obtuſe ſtigma. PERICARPIUM, an oval quinquelocular capſule, having numerous ſmall ſeeds.

There are about ſix ſpecies, the principal of which in the Engliſh gardens, are the following deciduous and ever green kinds.

*Deciduous Kinds.*

[1]RHODODENDRON *Ferrugineum.*

*Ferrugeneous Dwarf Roſe-bay of the Alps.*] Riſes with a ſhrubby ſtalk, branching irregularly, three or four feet high; cloſely garniſhed with ſmalliſh ſpear-ſhaped ſmooth leaves, ferrugeneous or iron coloured underneath; and cluſters of funnel-ſhaped red flowers, at the ends of the branches.

[2]RHODODENDRON *Hirſutum.*

*Hairy Dwarf Roſe-bay of the Alps.*] Hath a ſhrubby ſtem, branching numerouſly about two feet high; oval ſpear-ſhaped ciliated, naked leaves, having many iron-coloured hairs underneath, and cluſters of funnel-ſhaped pale-red flowers at the end of the branches.

[3]RHODODENDRON *Chamæciſtus.*

*Chamæciſtus, or Dwarf Roſe bay of Mount Baldis.*] Hath a ſhrubby ſtem, branching numerous and irregularly two or three feet high;

ſmall oval, ſpear-ſhaped, ciliated leaves, and cluſters of wheel-ſhaped flowers at the end of the branches.

*Ever-green Kinds.*

[4]RHODODENDRON *Maximum.*

*Large American Laurel-leaved Rhododendron.*] Riſes with a ſhrubby ſtem, branching eight or ten feet high; large, oval, obtuſe, veined, ſhining, green leaves, the margin acutely reflexed, and pale-red flowers at the ends of branches, each pedunculi having but one flower.

Grows naturally in Virginia.

[5]RHODODENDRON *Ponticum.*

*Pontic Dwarf Roſe-bay.*] Grows four or five feet high, ſpear-ſhaped, ſmooth, ſhining leaves, and the branches terminated by cluſters of bell-ſhaped purple flowers.

It grows naturally in humid places in the Eaſt, and about Gibraltar.

All theſe ſhrubs, both deciduous and ever-green kinds, flower moſtly in June; the flowers are monopetalous, funnel and wheel-ſhaped, in different ſpecies, cut at top into five ſegments; and are ſometimes ſucceeded by ſeed here in England, eſpecially the ſecond, third, and fourth ſorts; the other but ſeldom.

The plants are all of foreign growth, reſidents moſtly of mountainous, rocky, ſhady places; and the laſt generally in moiſt ſituations.

They may all be employed to adorn the ſhrubbery, in which they will appear very ornamental; only they do not thrive ſo well in our gardens as moſt other ſhrubs, unleſs ſtationed in ſoils and ſituations nearly ſimilar to that where they naturally grow.

They are raiſed commonly from ſeeds ſowed in autumn, or as ſoon as they can be obtained, in a ſhady border; the ſeeds being very ſmall, make the ſurface of the ground ſmooth; ſow them thereon evenly, and cover them very lightly with fine mould: they will come up in the ſpring; and after a year's growth, prick them out into a ſhady ſituation.

Their propagation may alſo be tried by layers of the young wood.

RHUS, *Sumach* and *Toxicodendron*, &c.

This genus comprehends many ſpecies of the tree and ſhrub kind, for the ſhrubbery, green-houſe, and ſtove; obtaining from five or ſix, to ten or twelve feet ſtature; garniſhed moſtly with pinnate and trefoliate leaves, and pentapetalous flowers, moſtly in cluſters at the ends and ſides of the branches.

Claſs and Order, *Pentandria Trigynia.*

*Characters.*] CALIX, is monophyllous, five-parted, and permanent. COROLLA, five oval, erect patent petals. STAMINA, five very ſhort filaments and ſmall antheræ. PISTILLUM, a roundiſh germen as large as the corolla; ſcarcely viſible ſtyles, but three ſmall heart-ſhaped ſtigmas. PERICARPIUM, a roundiſh unilocular berry, ſome hairy, others ſmooth in different ſpecies, having a roundiſh hard ſeed.

To this genus is now added the *Toxicodendron*, or Poiſon-tree.

There are of the *Sumachs* and *Toxicodendrons* together, about fifteen ſpecies, all of which are of the tree and ſhrub kind, of foreign growth, of different parts of the world; conſiſting of ſeveral hardy deciduous kinds for the ſhrubbery; ſeveral tenderer ſorts for the green-houſe; and one for the ſtove; the moſt material ſpecies found in the Engliſh gardens, are the following.

*Hardy Sumach deciduous Kind.*

[1]RHUS *Coriaria.*

*Coriaria, or Tanners Sumach.*] Hath a ſtrong woody ſtem, dividing and branching irregularly, ten or twelve feet high; having a browniſh hairy bark; large pinnated leaves, of ſeven or eight pair of oval bluntly-ſawed lobes, terminated by an odd one, and hairy underneath; and large paniculated ſpikes of whitiſh flowers at the ends of the branches.

It grows wild in the ſouth of Europe and in Turky, where the branches are uſed inſtead of oak-bark for tanning leather.

[2]RHUS *Typhinum.*

*Virginian Stag's Horn Sumach.*] Hath a ſhrubby ſtem, branching irregularly eight or ten feet high, having crooked ſpreading branches, dividing into thick ſhoots, covered with a ſoft velvety down, and reſemble the form, colour, and texture of a young ſtag's horn; pinnated leaves of ſix or ſeven pair of ſpear-ſhaped acutely-ſawed lobes, terminated by an odd one, and downy underneath; and at the ends of the branches, large tufts of flowers, ſucceeded by cloſe downy cluſters of purple ſeeds, having a ſingular appearance in autumn and winter.

*Variety.*] Dwarf Virginian Stag's-Horn Sumach.

[3]RHUS

[3]Rhus *Glabrum.*

*Glabrous, or Smooth Sumach.*] Conſiſting of the three following varieties.

*New England Smooth Sumach.*] Riſes with a ſhrubby ſtem, branching irregularly from the bottom and ſides, twelve or fourteen feet high; having ſpreading branches, dividing into very thick, ſomewhat downy, ſmooth, brown ſhoots; large pinnated leaves, of ten or more ſpear-ſhaped lobes, and an odd one, ſmooth on both ſides; and large looſe panicles of greeniſh flowers at the ends of the branches.

*Carolina Smooth Scarlet Sumach.*] Grows eight or ten feet high, with ſmooth purple branches, duſted with a greyiſh powder; long, pinnated, ſmooth leaves like the other, and the branches terminated by large ſcarlet panicles of flowers.

*Canada Smooth Red Sumach.*] Grows eight or ten feet high, having a purpliſh bark, tinged with a whitiſh powder; long pinnated ſmooth leaves, of a ſhining green above, and whitiſh underneath; and the branches terminated by large panicles of red flowers.

[4]Rhus *Copallinum.*

*Copallinum, or Lentiſcus-leaved American Sumach.*] Riſes with a ſhrubby ſtem, dividing into ſpreading, ſmooth, brown branches, four or five feet high; pinnated leaves, of four or five pair of entire lobes, terminated by an odd one; having a membranaceous border running along the foot-ſtalk in joints, and large looſe panicles of greeniſh flowers at the ends of the branches.

*Variety.*] Canada Lentiſcus-leaved Sumach, growing eight or ten feet high, and larger pinnated leaves.

[5]Rhus *Cotinus.*

*Cotinus, Venice Sumach, or Coccygria.*] Riſes with a ſhrubby irregular ſtem, branching widely, about ten feet high, having a ſmooth brown bark; oval, ſimple, ſhining, green leaves; and the branches terminated by long hair-like pedicles, dividing into long hair-like bunches of ſmall purpliſh flowers.

In Italy and Spain, where this ſhrub grows naturally, they uſe the bark for tanning leather.

*Hardy Toxicodendron Deciduous Kinds.*

Theſe are of the ſhrub kind and deciduous, natives moſtly of America; were formerly ranged as a diſtinct genus, *(Toxicodendrum)* but are now made ſpecies of *Rhus*; moſt of the ſorts abounding with a milky poiſonous juice, obtain the appellation of Poiſon-tree in America, where they grow naturally in great abundance.

[6]Rhus *Toxicodendrum.*

*Common American Toxicodendron, or Poiſon-Oak.*] Hath a low ſhrubby ſtem, branching about three feet high, the lower ones trailing and rooting in the ground; ternate or three-lobed leaves, having roundiſh, angulated, and ſometimes entire lobes, each on a ſhort pedicle, and looſe panicles of ſmall whitiſh flowers at the ſides of the branches, ſucceeded by whitiſh berries in autumn.

*Varieties.*] Smooth-leaved—downy leaved—upright-growing.

[7]Rhus *Radicans.*

*Radicant American Toxicodendron.*] Riſes with a ſhrubby ſtem, branching four or five feet high, having trailing, radicant, or rooting branches; ternate ſmooth leaves, with oval entire lobes, and ſhort ſpikes of greeniſh flowers, ſucceeded by roundiſh berries in autumn.

*Variety.*] With upright branches.

[8]Rhus *Vernix.*

*Vernix, or Varniſh Tree, or Pinnated-leaved American Toxicodendron.*] Riſes with a ſtrong woody ſtem, branching thinly on every ſide, eight or ten feet high; pinnated leaves of three or four pair of oblong entire lobes, and an odd one; and at the axillas, looſe panicles of ſmall greeniſh flowers, and roundiſh berries, not ripening here. The milky juice of this tree being remarkable for ſtaining, is ſuppoſed to be the true Varniſh Tree, from which the varniſh is collected.

All the above eight hardy ſpecies being deciduous, produce their leaves in ſpring, and ſhed them in the autumn.

They flower here moſtly in June and July, for the general part in cluſters and panicles; each cluſter compoſed of numerous ſmall pentapetalous flowers, ſucceeded in ſome ſorts by ſeeds, ripening in September.

The plants are all proper furniture for ſhrubberies, wilderneſſes, and other ornamental plantations, to encreaſe the variety of the deciduous collection; they may be planted in any open compartments, in aſſemblage with other hardy deciduous ſhrubs, and they will effect a very agreeable diverſity in ſummer, and ſome ſorts alſo in autumn and winter; particularly ſome of the Sumach kinds, with their ſtag-horn, brown, velvety branches, and their large red panicles.

Obſerve, as ſeveral of the Sumachs abound in ſuckers from the root; and ſome of the *Toxicodendrons* encreaſe exceedingly by their

trailing radicant branches; they ſhould be cleared therefrom every year in winter.

*Method of Propagation.*

They are all eaſily propagated by ſeeds; ſeveral ſorts alſo by ſuckers and their rooting branches; and all the ſorts by layers.

By Seed.—Such ſorts as do not furniſh ſuckers, &c. may be eaſily raiſed from ſeed, procured from abroad; which ſhould be ſowed ſoon after they arrive, either in large pots or in a bed or border of light earth, and covered half an inch deep; they will ſometimes come up in May or June following, though if in pots and plunged in a hot-bed about ſix weeks, it will forward them, being careful to remove them to the full air ſoon after the plants appear; however, as thoſe in the natural earth ſometimes remain till the ſpring after, before they vegetate, keep the ground clear from weeds, give water in dry weather in ſummer, and if a ſevere winter, give occaſional ſhelter of mats, the firſt year; and when the plants are one or two years old, plant them out in nurſery rows, till large enough for the ſhrubbery.

By Suckers.—Several of the Sumachs ſend up abundance from the root; take them up any time in winter, and plant them in nurſery rows for a year or two.

By their radicant Branches.—The two firſt *Toxicodendrons* multiply by their branches, which trail and root in the ground as they advance, which may be taken up in autumn, winter, or ſpring with roots, and they will form proper plants.

By Layers.—Any of the ſorts furniſhing lower branches, may have the young wood laid by ſlit-laying in autumn, and many of them will be rooted in a year.

Moſt of the ſpecies of Rhus abound with a milky juice, reckoned more or leſs poiſonous, particularly the *Toxicodendrons*; as a ſlight touch of the leaves of theſe ſorts cauſe violent itchings, ſometimes followed by an inflammation and ſwelling; and if the juice of the wood or leaves is ſuffered to remain on the ſkin but for a few minutes, it occaſions puſtules like the itch: it is alſo ſaid, the wood of the Poiſon tree when burned, emits a very noxious fume, that will ſuffocate animals expoſed thereto in a room.

*Green houſe Kinds.*

Conſiſts of three African Sumach ſhrubs, comprehending ſeveral varieties; retaining their leaves all the year by ſhelter of the green-houſe in winter, and effect an agreeable variety in that collection.

[9]RHUS *Tomentoſum.*

*Tomentoſe, or Downy African Sumach.*] Hath a ſhrubby ſtem, branching irregularly, ſix or eight feet high; ternate leaves, downy underneath; compoſed of angular, rhomboidal, ſub-petiolated lobes, downy underneath, and ſlender bunches of whitiſh-green flowers from the ſides of the branches.

*Varieties.*] Hairy leaved—Serrated-leaved—Jagged-leaved—Oval-lobed.

[10]RHUS *Anguſtifolium.*

*Narrow-leaved African Sumach.*] Hath a ſhrubby ſtem, and irregular brown branches, growing from five or ſix, to ten or twelve feet high in the varieties; ternate leaves, having linear-lanceolate, entire, petiolated lobes, downy underneath; and ſmall looſe bunches of whitiſh-green flowers from the ſides and ends of the branches.

*Variety.*] Silvery cut-leaved.

[11]RHUS *Lucidum.*

*Lucid, or Shining-leaved African Sumach.*] Hath a ſhrubby ſtrong ſtem, and irregular brown branches, growing ten or twelve feet high; ternate leaves, having wedge-ſhaped, ſeſſile, ſmooth, ſhining-green lobes; and ſmall bunches of greeniſh flowers.

*Varieties*] Round lobed—Heart-ſhaped lobed—Dwarf growing.

Theſe three green-houſe ſpecies muſt be always kept in pots, in order for moving to ſhelter in winter, managing them as other ſhrubby plants of the green-houſe collection. See GREEN-HOUSE PLANTS.

They are eaſily propagated by layers and cuttings.

By Layers.—In ſpring, lay any of the lower young wood in the common way, and they will be rooted and fit to pot off in autumn.

By Cuttings.—Plant cuttings of the young ſhoots in April, May, or June, in pots; and if plunged in any hot-bed, they will ſoon ſtrike, giving occaſional ſhade and watering, and towards autumn pot them off ſeparately.

*Stove Kinds.*

[12]RHUS *Cobbe.*

*Cobbe, or Ceylon Sumach.*] Hath a ſhrubby ſtem, branching eight or ten feet high; ternate leaves, having oval, acuminated, ſawed lobes, and cluſters of whitiſh-green flowers at the ends of the branches, having downy peduncles.

It is a tender exotic, requiring a ſtove in this country, ſo muſt always be kept in pots, and placed in that department and managed as other ſhrubby hot-houſe plants.

Propagate it by cuttings in the ſpring, planted in pots, and plunge them in a bark-bed.

RIBES, Currant-tree and Gooſeberry-buſh.

The Currant and Gooſeberry are hardy deciduous ſhrubs, ſpecies of the ſame genus, each compriſing many varieties, all of buſhy growth; garniſhed with trilobate ſimple leaves, and very ſmall pentapetalous flowers from the ſides of the branches; ſome in racemous cluſters, others ſingly, ſucceeded by globular berries, valuable as early ſummer fruit for the deſert; alſo for various culinary purpoſes, and ſome for medical uſes.

Claſs and Order, *Pentandria Monogynia.*

*Characters.*] CALIX, is monophyllous, ventricoſe, cut into five concave ſegments, and permanent. COROLLA, five ſmall obtuſe petals attached to the border of the calix. STAMINA, five ſubulate filaments inſerted in the calix, having incumbent compreſſed antheræ. PISTILLUM, a roundiſh germen under the flower, bifid ſtyle, and obtuſe ſtigmas. PERICARPIUM, a globoſe, umbilicated, unilocular berry, full of pulp, and many roundiſh compreſſed ſeeds.

The Currant and Gooſeberry were long conſidered each as a ſeparate genus; *Ribes* the Currant, and *Groſſularia* the Gooſeberry; but agreeable to ſyſtematic botany, they are now joined together, the *Groſſularia* being made a ſpecies of *Ribes*; all the Currant kinds having inermous or thornleſs branches, and racemous cluſters of flowers and fruit; and the Gooſeberry have ſpinous branches, and flowers and fruit for the moſt part ſingly.

*Currant Kinds.*

There are three ſpecies of the Currant-tree, two of which and their varieties, merit culture for their fruit; the other as a plant of variety or obſervation; all of which are inermous or unarmed, having no thorns on the branches.

[1]RIBES *Rubrum.*

*Common Red Currant-tree*, &c.] Hath a ſhrubby ſtem, dividing low into many branches, forming a buſhy head, five or ſix feet high, or more, without thorns; broad trilobate leaves, and ſmooth pendulous cluſters of plane greeniſh flowers, ſucceeded by cluſters of ſmall berries.

It grows naturally in woods and hedges in England, and moſt parts of Europe.

*Varieties.*] Compriſes all the ſorts of Red and White Currants, as, Common, ſmall, Red Currant——Large Red Dutch Currant—Long bunched Red Currant—Champaigne Pale-red Currant—Common ſmall White Currant—Large White Dutch Currnt—Yellow blotched leaved Currant—Silver ſtriped-leaved—Gold ſtriped-leaved—Gooſeberry-leaved.

All theſe ſorts are varieties of one ſpecies: *Ribes Rubrum*, or *Common Red Currant*, it being the parent from which all the others were firſt obtained from the ſeed, and improved by culture; they all flower in the ſpring, and the fruit ripens in June and July; and by having the trees in different ſituations and modes of training, ſuch as plantations of ſtandards in the open quarters, for the general ſupply, others trained againſt walls or pales, of different aſpect, the fruit may be continued ripe in good perfection, from about the middle of June until November, provided the later crops are defended with mats or nets from the birds: the ripe fruit of all the varieties are valuable, not only to eat raw, as being of an agreeable, quick, acid reliſh, and fine cooling quality, excellent to quench thirſt and create an appetite; but the red ſorts in particular are made into gellies, tarts, ſauces, and other culinary preparations. Likewiſe, of Currants is made good wine, and they are alſo uſed in medicine; ſo that plenty of the trees ſhould be cultivated in every garden for the fruit, both for private uſe and the ſupply of markets: as to the variegated-leaved kinds, they are valued as furniture for the ſhrubbery, to cauſe diverſity in the different variegations of their leaves; they alſo bear fruit plentifully like the other kinds; and all the varieties of every ſort are very eaſy of propagation and culture, by cuttings, ſuckers, and layers. See their *Propagation.*

[2]RIBES *Nigrum.*

*Black Currant-tree.*] Hath a ſhrubby ſtem, dividing low into many branches, forming a buſhy head, five or ſix feet high; broad trilobate leaves of a rank odour, and having racemous cluſters of oblong greeniſh flowers, ſucceeded by thin cluſters of black-berries.

The fruit of this ſpecies being of a ſtrong flavour and ſomewhat phyſical reliſh, is not generally liked; it however is accounted very wholeſome, and of which is alſo made a ſyrup of high eſtimation for ſore throats and quinſeys; hence the fruit is often called ſquinancy berries

*Vari-*

*Variety.*] *Penſylvanian Black Currant.* Having ſmaller ſhoots and leaves; not ſtrong ſcented, and ſmall fruit of but little value; ſo the ſhrub is eſteemed only for variety in ſhrubberies.

The mode of bearing of all the varieties of Currants, is both on the old and young wood, all along the ſides of the branches and ſhoots, often upon a ſort of ſmall ſpurs and ſnags, producing the fruit in numerous long pendulous cluſters.

*Groſſularia, or Gooſeberry Kinds.*

Of the *Groſſularia* or Gooſeberry kinds, there are four or five ſpecies, comprehending many varieties, all of which are of buſhy growth, from about three or four, to ſix or ſeven feet high; ſome being upright, others of reclinated growth; have all their branches armed with ſpines, and produce their fruit both on the young and old wood, all along the ſides of the branches and ſhoots; ſometimes immediately from the eyes or buds, of the young wood in particular, and alſo on ſmall ſpurs on the older branches; in all of which the flowers and fruit ariſe, ſome ſingly, others in ſmall bunches; all of the berry kind; uſeful both when green and ripe; green, for tarts, pies, ſauces, and for preſerving in bottles for winter uſe; and when ripe, it is valuable as an early deſert fruit; and the different ſorts afford great variety at table, in their different colours and reliſhes.

[3]Ribes *Groſſularia.*

*Groſſularia, or Common Gooſeberry-buſh.*] Riſes with a low ſhrubby ſtem, dividing low into a very branchy buſhy head, armed with ſpines; trilobate ſmalliſh leaves, having hairy ciliated foot-ſtalks, and ſmall greeniſh flowers, ſucceeded by hairy berries.

*Varieties* ] Conſiſts of many varieties of different ſizes and colours, as hereafter deſcribed.

[4]Ribes *Reclinatum.*

*Reclinated broad-leaved Gooſeberry-buſh.*] Riſes with a low ſhrubby ſtem, and reclinated ſomewhat prickly branches; trilobate broadiſh leaves, and ſmall greeniſh flowers, having the pedunculi furniſhed with triphyllous bractea.

[5]Ribes *Oxyacanthoides.*

*Oxyacantha-leaved Gooſeberry.*] Hath a ſhrubby ſtem, and branches armed on all ſides with ſpines; and largiſh trilobate hawthorn leaves.

[6]Ribes *Uva criſpa.*

*Uva criſpa, or Smooth Gooſeberry.*] Hath a ſhrubby ſtem and branches, armed with ſpines; trilobate leaves; pedicles having monophyllous bractea; and ſmooth fruit.

[7]Ribes *Cynoſbati.*

*Prickly-fruited Gooſeberry-buſh.*] Hath a ſhrubby ſtem and branches armed with ſpines moſtly at the axillas; and prickly fruit in cluſters.

*Varieties of the different ſpecies.*] Many varieties of Gooſeberries have been raiſed from ſeeds; ſome having round berries, others oval; ſome hairy and ſome ſmooth, and of different colours, as Red—Green—Yellow—White, &c. conſiſting of the following varieties of each ſort

*Red Kinds.*—Hairy Red Gooſeberry—Smooth Red Gooſeberry—Deep Red Gooſeberry—Damſon, or Dark-red blueiſh Gooſeberry—Red Raſpberry Gooſeberry—Early Black-red Gooſeberry.

*Green Kinds.*—Hairy Green Gooſeberry—Smooth Green Gooſeberry—Green Gaſcoigne Gooſeberry—Green Raſpberry Gooſeberry.

*Yellow Kinds.*—Great oval Yellow Gooſeberry—Great Amber Gooſeberry—Hairy Amber Gooſeberry—Early Amber Gooſeberry.

*White Kinds.*—Large White Cryſtal Gooſeberry—Common White Gooſeberry—White-veined Gooſeberry.

*Other Varieties of different Sorts.*] Champaigne Gooſeberry—Rumbullion Gooſeberry—Large Ironmonger Gooſeberry—Smooth Ironmonger Gooſeberry—Hairy Globe Gooſeberry—Large Tawney, or Great Mogul Gooſeberry.

All the above ſeven ſpecies of *Ribes*, both Currant and Gooſeberry kinds and their reſpective varieties, are very hardy ſhrubs, that proſper almoſt any where, both in open and ſhady ſituations, and in any common ſoil; bearing plentifully in any expoſure, though in open ſunny ſituations, they produce the largeſt and faireſt fruit, ripening to a richer vinous flavour; but it is eligible to plant them in different ſituations and aſpects, in order to have the fruit as early and late as poſſible.

They are commonly planted in the kitchen garden moſtly as dwarf ſtandards, in the open quarters, for the general ſupply; being diſpoſed ſometimes in continued plantations in rows, eight or ten feet by ſix aſunder, where great quantities of the fruit are required for market or other large ſupplies; and are ſometimes diſpoſed in ſingle ranges round the outward edge of the quarters, eight feet aſunder; frequently in ſingle croſs rows, in order to divide the ground into ſeparate wide plats or breaks, of

of from twenty to thirty or forty feet width; which alſo ſerves to ſhelter the ground a little in winter; in all of which methods of planting them as ſtandards, they ſhould be generally trained up to a ſingle ſtem about a foot high, then ſuffered to branch out every way all around into buſhy heads, keeping the middle however open, and the branches moderately thin, to admit the ſun and free air; though if ſome are fanned, that is, trimmed on two ſides oppoſitely, ſo as to make the other branches range in a line like an eſpalier, whereby they will take up much leſs of the ground, and, by admitting the ſun and air more freely, they will produce large fair fruit.

They are likewiſe trained againſt walls or palings, like other wall trees; but principally ſome of the large red and white Dutch Currants, in which they will produce fine large fruit, and thoſe againſt any ſouth fence will ripen early and be high flavoured; but it is proper to plant a few both againſt ſouth, north, eaſt, and weſt walls, in order to obtain the fruit ripening both early and late, in a long ſucceſſion. It is alſo proper to plant a few of the fineſt ſorts of Gooſeberries againſt a warm fence, both to have early green Gooſeberries for tarts, &c. as well as to ripen early; and they will grow very large and fine.

Sometimes both Currants and Gooſeberries are alſo trained in low eſpaliers for variety, and they produce very fine fruit.

All the varieties of theſe ſhrubs are raiſed plentifully in the nurſeries for ſale.

*Method of Propagation.*

All the ſorts of Currants and Gooſeberries are expeditiouſly propagated by cuttings, ſuckers, and layers; but as every cutting and ſlip will moſt readily grow, that mode of propagating them is moſt commonly adopted in the nurſeries, in raiſing great quantities for ſale.

By Cuttings. — Autumn, at the fall of the leaf, is the moſt eligible ſeaſon for planting the cuttings; it may alſo be performed any time in winter, in open weather, and early part of the ſpring; chuſing the young ſhoots of laſt ſummer, cutting them off from about ten or twelve to eighten inches long, and plant them in any ſhady border, in rows a foot aſunder, each full half way into the ground; they will root firmly the enſuing ſummer, ſhoot at top, and form tolerable little plants by next autumn, when every other row may be thinned out, and planted in nurſery lines two feet and half aſunder; afterwards train the whole for the purpoſes deſigned.

Obſerve thoſe deſigned for common ſtandards, ſhould be trained up to a twelve or ſifteen inch ſtem, then encourage them to branch out all around at that height to form a full head; for if ſuffered to branch away immediately from the bottom, according to the natural mode of growth of theſe kind of trees, as is often the caſe in many gardens, they overſpread the ground, that no crops can grow near them, as well as appear unſightly, and render it inconvenient to do the neceſſary work: it is therefore of importance to keep them to a ſingle ſtem, a foot at leaſt high, then ſuffered to form the firſt ſet of branches, trimming off low ſtragglers, and encourage the more upright growths; thinning them to moderate diſtances, and reduce long ramblers to preſerve a ſomewhat regular head; the trees will thus aſſume a decent appearance, admit of ſmall crops under them, and will be more eaſily kept in regular order.

And if intended to train any of them with fanned branches, either for fanned ſtandards, or for walls and eſpaliers, they muſt be encouraged to branch out near the bottom, and ranged the way of the rows, cutting off all croſs or foreright ſhoots, ſo as to form the branches in a ſtraight range, like an eſpalier, &c.

In all the above modes of training theſe ſhrubs, by cuttings, they will attain a bearing ſtate in two or three years.

By Suckers.—All the ſorts ſend up ſuckers very plenteouſly from the roots, each ſucker forming a proper plant, and is the moſt expeditious mode of propagating all the varieties, both Currants and Gooſeberries; they may be taken up in autumn, winter, or ſpring, with roots, or even ſuch as are without fibres will ſucceed; for the lower part having been ſituated in the ground, is naturally diſpoſed to ſend out fibres very ſoon; planting them either in nurſery rows for a year or two, or ſuch as are tall and ſtrong may be planted at once where they are to remain: obſerving to train the whole for the purpoſes intended, as directed for the cuttings, and they will form bearing plants after one or two years growth.

But the propagating them by ſuckers, is by ſome objected to, as alledging they incline to run greatly to ſuckers again, and encumber the ground; there is however, but little foundation in this, for it is peculiar to theſe ſhrubs,

them be raiſed either by ſeeds, cuttings, or any other method, they are natrually diſpoſed to ſend up many ſuckers from the roots annually. See SUCKERS.

Sometimes theſe ſhrubs having been permitted to advance with ſeveral ſtems, formed by ſuckers that have ariſen directly from the root; the whole forming a large ſpreading buſh; which, if taken up may be divided into ſeveral ſeparate plants, with good roots and branchy heads, and planted out finally to remain; they will at once commence good bearing plants, producing fruit the following ſummer.

By Layers.—The young branches being laid any how, in autumn, winter, or ſpring, will readily ſtrike root, and next autumn be fit to tranſplant.

In the general propagation of theſe ſhrubs, we would obſerve, that, as they naturally throw out many ſuckers from the root, ſo as often to become troubleſome, it is proper, previous to planting the cuttings, and ſuckers, &c. to rub off cloſe all the buds or prominent eyes, from the lower part, as far as they are to be put into the ground, which will in ſome meaſure diminiſh their tendency in the production of ſuckers: likewiſe, when tranſplanting the young plants, if they diſcover any tendency to the bottom for ſuckers, let all ſuch parts be alſo carefully rubbed off cloſe.

*Final Tranſplantation.*

When theſe ſhrubs are grown about two or three feet high, having tolerable heads, they are of a proper ſize for tranſplanting finally, into the garden where they are to remain for bearing.

They may be tranſplanted any time from October until March, in open weather.

Plant them in rows, eight or ten feet diſtance, both as ſtandards and for walls, &c. obſerving to plant the principal quantity as ſtandards for the general ſupply, and a few of the choicer ſorts for walls, particularly of the Currants.

In planting them for ſtandards, if a full or continued plantation of them is intended, ſet them in rows eight or ten feet aſunder, as above obſerved; and ſix diſtant in the ranges; and if deſigned in ſingle rows, either round or croſs ways the quarters, allow full ſeven or eight feet diſtance, for if cloſer, they will ſoon meet and prove troubleſome.

And in planting them againſt walls or eſpaliers, let ſome be planted againſt a ſouth wall, to produce early fruit; others on a north; and other aſpected fences; allowing them eight or ten feet diſtance, as aforeſaid, and train their branches four or five inches aſunder.

*General Culture.*

*Their culture in common Standards.*—Continue to train them with a ſingle ſtem, a foot high, as already hinted; and let the head branch out four or five feet high, keeping the middle ſomewhat hollow, and the branches at tolerable diſtances, by occaſional pruning, not with garden ſheers, but regularly with a pruning knife; obſerving however, if the plants are permitted to aſpire in in height, ſhoot at full length, and take their own natural growth, they will grow higher and more ſpreading, and ſhoot more moderate, than if pruned annually, and will alſo bear plentifully without trouble; though if they are kept down by proper pruning, to about four feet height, the middle kept open, and the branches thin, at ſome reaſonable diſtances, they will probably produce larger fruit, ripening ſooner, and with a better flavour; but remarking, in this caſe, that by the annual pruning to keep the ſhrubs low and regular, it cauſes them to throw out numerous ſhoots every ſummer, and crowd them with uſeleſs wood, which muſt be regulated accordingly, by pruning them every winter, to retrench all that are evidently ſuperfluous, and reſerving others occaſioally in proper places for young bearers, and to cut out irregular crowding branches occaſionally.

This pruning is performed in winter, or any time from the fall of the leaf till February. With your knife retrench all ſuperfluous ſhoots of laſt ſummer from the middle of the plants, and from the ſides of the branches in general, only reſerving a terminating ſhoot to every branch, and ſome regular ſhoots occaſionally towards the lower parts, either to be coming forward for young bearers, or to fill any preſent or apparently future vacancy; or to ſupply the place of any worn out branches, or dead wood, which ſhould always be retrenched, and ſome contiguous ſhoots retained in its ſtead, and clear the bottom from all ſuckers, &c.

At the ſame time obſerving, that when the branches in general become too numerous and crowding, or grow acroſs, or in any very irregular growth, to cauſe confuſion and diſorder, they ſhould alſo be regulated by pruning out the moſt irregular, leaving the others five or ſix inches aſunder; likewiſe, retrench all low ſtragglers; and according as any of the branches

branches become too long, or advanced higher than you intend, or any long rambler happening, they ſhould be reduced to order, by ſhortening them down to ſome convenient young ſhoot, or lower young branch terminated by one; for in reducing or ſhortening the branches, as occaſion may require, they ſhould not be ſtumped off, but pruned down to a young ſhoot or branch; as juſt hinted; that they may ſtill terminate in a young ſhoot for a leader.

The general ſupply of young ſhoots may be more or leſs ſhortened, according to their ſtrength and ſituation, but more particularly the currants, if thought neceſſary to keep the head low and within ſmall compaſs; cutting the upper ſhoots to ſix, eight, or ten inches; but the lower ones deſigned to grow up to fill any vacancy, leave longer in proportion, or at full length, as it ſhall ſeem proper, till arrived to the deſired height.

But the Gooſeberry kinds having the young wood much ſhortened, it cauſes them to throw out very numerous ſhoots in ſummer, and crowd the buſhes exceedingly with unneceſſary wood, it is therefore eligible to ſhorten the ſhoots of theſe kinds but moderately, or leave them moſtly entire, or at full length; ſuch however, as recline conſiderably, or ramble away from all the reſt, ſhould be reduced with the knife, ſo as to preſerve a little regularity in the head.

To conclude, be careful always, both in the Currant and Gooſeberry kinds, not to ſuffer them to become of ſtraggling growth, ſpreading near the ground, nor too much crowded at top; but annually clear off all ſuckers from the bottom, all lower ſtraggling ſhoots from the ſtem, and keep the middle of the head open, and the branches in general thin, about ſix or ſeven inches aſunder, as aforeſaid, preſerving all the ſmall laterals bearing ſnags, natural ſpurs and fruit-buds; and thus theſe ſhrubs will always bear large and fair fruit in great abundance.

*Their culture in fanned Standards.*—If intended to fan any of them in ſtandards, ranging the branches in the manner of eſpaliers, you muſt encourage only the branches that range the way of the rows, trimming off all fore and back ſhoots, and range the others about ſix inches aſunder, at full length, till thoſe of each tree nearly approach, giving occaſional pruning both in ſummer to retrench all ſuperfluous and projecting foreright ſhoots; and in winter to give a general regulation as obſerved for the common buſh ſtandards.

*Training them againſt walls and eſpaliers.*—Let them branch out near the bottom, as formerly noticed in the nurſery culture, clearing off all foreright growers, and train the others horizontally to the wall, &c. five or ſix inches aſunder, at full length, till they have filled the allotted ſpace; they will naturally form fruit-buds all along their ſides, and bear abundantly. Obſerve to give them a ſummer and a winter pruning; in ſummer to retrench cloſe all foreright, and evidently ſuperfluous ſhoots, and train in only an occaſional ſupply of ſome of the moſt regular ſhoots towards the lower parts till winter, in caſe of a vacancy, or to be in training for young bearers; and if then not wanted, muſt be diſplaced; and by this regulation in ſummer, it not only preſerves the uniformity of the trees, but exhibits the fruit to view, and gives acceſs to a due portion of ſun and air to improve its growth and flavour. And in winter pruning, ſee if there are any vacancies, and retain ſome contiguous ſhoot left in ſummer, cutting out any worn out or naked branch, down to ſome lower ſhoot or young branch, as obſerved of the ſtandard buſhes; looking occaſionally to the lower part of the trees for any well placed ſtrong ſhoots, and ſee if they are wanted either to fill a preſent vacancy, or for training in to ſerve future purpoſes to ſupply the place of any old branch becoming naked, or unfurniſhed with bearing parts; in which caſes, retain occaſional ſupplies of young wood as you ſhall ſee neceſſary, keep all the main branches at regular diſtances, preſerving all the ſpurs and fruit-buds, but cut off any long projecting ſnags, and all dead wood. Then train the whole ſtraight and cloſe to the wall at the diſtances afore-mentioned.

Theſe trees thus properly trained againſt walls, will grow eight or ten feet high, and extended widely every way.

### *Of the Fruit.*

The fruit of all the varieties, both Currants and Gooſeberries, on ſtandards and againſt walls, begin to ripen in June, but do not attain full perfection till July; thoſe againſt warm walls ripen ſooneſt by a fortnight, if the trees are properly dreſſed in ſummer, and will be ſucceeded by the ſtandards for the general crop.

When deſigned to continue a ſupply of theſe fruit, as long in the ſeaſon as poſſible, it is proper to net ſome of the fulleſt trees, when they begin to ripen, to defend the berries from the birds; and mat others to ſhade them from the

ſun, in order to retard their ripening. And if when full ripe, ſome are cloſely matted with large mats, particularly Currants, it will preſerve the fruit in perfection on the trees till October or November.

RICINUS, *Palma Chriſti.*

Conſiſts of tall, herbaceous, tender annuals for the pleaſure ground, riſing with ſtrong erect ſtems from three or four to ten or twelve feet high, adorned with luxuriant, palmated, peltated leaves, on long foot-ſtalks, and long ſpikes of apetalous monoeceous flowers, in July and Auguſt.

Claſs and order, *Monoecia, Monadelphia.*

*Characters.*] CALIX, male and female flowers, apart in the ſame ſpike; the males having monophyllous, five-parted cups, and thoſe of the females three-parted, and deciduous.——COROLLA, no petals.—STAMINA, numerous filiforme filaments, variouſly connected in the monadelphous way, terminated by roundiſh didymous antheræ.—PISTILLUM, an oval covered germen, three bifid, erect-patent ſtyles, crowned by ſimple ſtigmas.—PERICARPIUM, a roundiſh triſulcated, trivalved, trilocular capſule, each cell having a ſingle oval ſeed.

There are three ſpecies, one of which only is common to our gardens, comprehending ſeveral varieties, ſome growing eight or ten feet high, others not above half ſo much, eſteemed as ornamental plants for the ſingularity of their large, beautiful leaves, from one to two feet and half broad, deeply lobated into ſix or ſeven ſegments, expanded in the palmated way, and the foot-ſtalks, fixed in the middle underneath, in the peltated manner. See FOLIUM.

The ſpecies is

RICINUS *Communis.*

*Common Palma Chriſti.*] Riſes with an upright, ſtrong, herbaceous, jointed ſtem, eight or ten feet high; having ſub-palmated, peltated ſawed leaves, and at the axillas, long ſpikes of whitiſh-green flowers, ſucceeded by ripe ſeeds in autumn.

*Varieties.*] There are many varieties, formerly ſuppoſed to be diſtinct ſpecies, but are found to be all varieties only of *Ricinus Communis* — and of which there are — *Major Palma Chriſti*, growing from about ſix or eight to ten or twelve feet high. — *Minor Palma Chriſti*, growing but three or four feet high — green-ſtalked — grey-ſtalked—brown-ſtalked—red-ſtalked, &c.—broad-leaved, being more than two feet in breadth — leſſer-leaved, being from ten or twelve to fifteen or eighteen inches wide—deeply divided-leaved—ſlightly divided-leaved—grey-leaved—green-leaved—ſix-lobed-leaved — ſeven-lobed-leaved, &c. being all varieties of one ſpecies, which, and its varieties in general, are annual or biennial, natives of Africa, America, and the South of Europe, and require a hot-bed to raiſe them in this country.

They are fine majeſtic plants, annual, or at moſt biennial in England; but in their native ſoil, it is ſaid, they are durable both in root and ſtem. In England however, we conſider them only as annuals, for being raiſed from ſeed in the ſpring, they ſhoot up to ſtem, flower, and perfect ſeeds the ſame year, and, if not ſheltered, die root and all in the winter: but being ſheltered in a green houſe, or ſtove, during that ſeaſon they will abide two years.

Their merit in our gardens is as ornamental plants, being raiſed firſt in a hot-bed, then tranſplanted into the borders in ſummer, they will effect a fine variety.

*Their Propagation, &c.*

They are raiſed from ſeed ſowed in any hot-bed with other tenderiſh annuals, ſuch as Africans, China aſters, &c. half an inch deep: when they are come up three inches high, pot ſome of them ſeparately in ſmall pots, which plunge alſo in a hot bed; others prick in the earth of the bed, giving plenty of water, and according as they encreaſe in ſize, ſhift thoſe in pots into larger ſizes; and about the end of May, or beginning of June, remove all of them into the full air, tranſplanting ſome with balls about their roots into the open borders, and retain ſome in pots to move occaſionally, where wanted: ſupplying the whole with water in dry weather, particularly the tranſplanted plants in the borders, &c. till firmly rooted, and the potted plants all the ſummer, about three times a week. Thus theſe fine plants will grow to their full height in Auguſt, well cloathed with their noble foliage, and will produce flowers and ſeed.

If intended to preſerve any in the greenhouſe all the winter for variety, chuſe ſome of the handſomeſt potted plants, which remove into that repoſitory in October, where they will retain their ſtems and leaves.

RIDGING *Ground.*——See DIGGING *by Trenches*, and TRENCHING.

RIVINIA, *Rivinia.*

Two ſhrubby ever-greens for the ſtove compoſe this genus: one a low upright plant, the other a high climber; furniſhed with heart-

ſhaped

ſhaped and oval leaves, and ſpikes of ſmall apetalous flowers.

Claſs and order, *Tetandria Monogynia.*

*Characters.*] CALIX, four oblong-oval, coloured, permanent leaves.——COROLLA, no petals.——STAMINA, four and ſome eight permanent filaments, having ſmall antheræ.—PISTILLUM, a large roundiſh germen, ſhort ſtyle, and obtuſe ſtigma.—PERICARPIUM, a globular unilocular berry lodged cloſe in the calix, having one roundiſh ſeed.

The ſpecies are.

[1]RIVINIA *Humilis.*

*Dwarf Tetrandrous Jamaica Rivinia.*] Hath a low ſhrubby ſtem, dividing and branching three or four feet high; heart-ſhaped leaves, and long ſpikes of ſmall tetrandrous flowers, ſucceeded by red berries.

*Varieties.*] Downy-leaved — white-flowered — ſcarlet-flowered.

[2]RIVINIA *Octandria.*

*Climbing Octandrous American Rivinia.*] Riſes with a ſhrubby, climbing, branchy ſtem, fifteen or eighteen feet high. Oval ſpear-ſhaped leaves, and looſe ſpikes of ſmall octandrous flowers, ſucceeded by blue berries.

Both the ſpecies are ever-green, and being tender exotics from the warmeſt parts of America, muſt be kept always in pots, and placed among the ſtove plants, where they will flower moſt times of the year: the flowers are apetalous, ſeparately ſmall, but numerous in each ſpike, ariſing in great abundance from the ſides and ends of the branches, ſucceeded by berries.

They are raiſed from ſeed ſowed in pots, and plunged in a bark-bed. Try them alſo by layers and cuttings, aſſiſted by heat.

ROBINIA, Falſe Acacia.

Conſiſts of hardy deciduous trees and ſhrubs for ornamental plantations, and tender kinds for the hot-houſe collection; adorned with pinnated and quaternate leaves; and pendulous cluſters of papilionaceous flowers.

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX is monophyllous, and four-parted, having the three under-ſegments narrow, the other broad.—COROLLA, is papilionaceous, having a large round patent vexillum, two oval wings, with ſhort appendices, and a nearly ſemi-orbicular depreſſed carina.—STAMINA, ten diadelphous filaments, and roundiſh antheræ.—PISTILLUM, a cylindric oblong germen, ſlender bent ſtyle, and hairy ſtigma.—PERICARPIUM, a large oblong compreſſed pod, having kindney-ſhaped ſeeds.

There are ſix ſpecies, all of the tree and ſhrub kind, four of them hardy for the ſhrubbery, and two tender for the ſtove.

*Hardy Kinds.*

Theſe conſiſt of one large tree, and three moderate ſhrubs, all deciduous, natives of foreign parts, America, Siberia, and Tartary, but all hardy enough to ſucceed in our open plantations.

[1]ROBINIA, *Pſeud Acacia.*

*Common Pſeud-Acacia, Falſe-Acacia, or American Robinia.*] Riſes with a ſtrong, woody trunk, dividing and branching thirty or forty feet high; armed with ſtrong ſpines; large, long, pinnated leaves of nine or ten pair of oval lobes, and an odd one, having prickly ſtipulæ, and long pendulous racemous cluſters of papilionaceous, white, odoriferous flowers, one on each pedicle, ſucceeded by ſmooth ſeed-pods.

*Varieties.*] Conſiſts of the two following, formerly conſidered as diſtinct ſpecies, viz.

*Echinated, or Prickly-podded American Falſe-Acacia.*] Grows thirty or forty feet high, having leaves and flowers like the other, but ſhort very prickly pods.

*Roſe Acacia, or Hiſpid American Robinia.*] Grows fifteen or twenty feet high, but appears like a moderate ſhrub in England, armed with ſpines, and hiſpid hairs on every part, having leaves and flowers formed like the other: but the flowers are of a beautiful roſe-colour, making a fine appearance.

This is a very beautiful flowering ſhrub, for the principal compartments of the ſhrubbery.

[2]ROBINIA, *Caragana.*

*Caragana, or Siberian Robinia.*] Riſes with a ſhrubby ſtem, branching eight or ten feet high, or more: abruptly pinnated leaves of five or ſix pair of oval lobes, not terminated by an odd one; and ſimple or unbranched pedunculi, ſuſtaining ſmall yellow flowers.

[3]ROBINIA *Fruteſcens.*

*Shrubby Quaternate-leaved Siberian Robinia.*] Hath a ſhrubby ſtem, branching ſix or eight feet high, quaternate oval leaves, on ſhort foot-ſtalks: and ſimple pedunculi, ſuſtaining yellow-flowers.

[4]ROBINIA, *Pigmæa.*

*Dwarf quaternate leaved Siberian Robinia.*] Hath a low ſhrubby ſtem, branching about three feet high. Quaternate, wedge-ſhaped, cloſe-ſitting leaves; and ſimple pedunculi, ſuſtaining yellow-flowers.

The above four hardy ſpecies flower here annually, the firſt ſort in June, and the others in May. The flowers are all papilionaceous and

and tetrapetalous; ariſing from the ſides and ends of the branches; which in the firſt ſort and varieties being produced in long cluſters, make a fine appearance, particularly the variety *Roſe Acacia*; and moſt of the ſorts are ſucceeded by ſeed-pods, ripening in September, particularly the laſt three ſpecies.

They are all proper furniture for embelliſhing the ſhrubberies, will ſucceed any where, and exhibit a fine variety with their pinnated and quaternate leaves, and the *Pſeud-Acacia*, and varieties, alſo with the numerous cluſters of flowers.

*Hot-houſe Kinds.*

Conſiſts of two tree and ſhrub ſpecies, natives of the warm parts of America and India.

[5]ROBINIA *Violacea.*

*Violet American Robinia.*] Hath a woody trunk, branching twenty feet high: pinnated leaves of eight or ten pair of oval lobes, and an odd one: and cluſters of violet coloured-flowers, two on each pedicle.

*Varieties.*] With dark-blue-flowers—ſcarlet-flowered — and with leaves having ſpear-ſhaped lobes — oblong lobes, &c.

[6]ROBINIA *Mitis.*

*Smooth Indian Robinia.*] Hath a ſmooth ſhrubby-ſtem, and taper branches; pinnated leaves, of ſeveral pair of oval lobes, and an odd one; and cluſters of whitiſh flowers, three on each pedicle.

All the four hardy ſpecies being for the ſhrubbery, may be had at the nurſeries, particularly the firſt ſort and varieties, and the *Caragana*: and may all be planted in any common ſoil and ſituation.

But the two tender ſpecies muſt always be kept in pots, and placed in the ſtove.

*Method of Propagation.*

The hardy kinds are raiſed from ſeeds, cuttings, layers, and ſuckers.

By Seeds.—In March, ſow them in any bed of light mould, half an inch deep: the plants will come up in leſs then two months, the firſt ſpecies and varieties in particular, the others ſometimes not till ſpring after, unleſs ſowed in autumn: give occaſional weeding and watering, and in the ſpring following plant them out in nurſery rows, to have two or three years growth.

By Cuttings.—In October or November, having a quantity of cuttings of the young ſhoots, plant them in a ſhady border, and they will be rooted well in one year.

By Layers.—Lay the young wood in autumn, they will be rooted by autumn following.

By Suckers.—The firſt ſpecies generally ſend up plenty from the root, which tranſplant any time from October till March.

The tender ſorts are raiſed from ſeed cuttings and layers, aſſiſted by artificial heat.

ROSA, Roſe-Tree.

This noted genus comprehends numerous deciduous flowering ſhrubs, and an evergreen; all of hardy growth, and the pride of the ſhrubby-flowering tribe, for adorning the pleaſure-grounds, &c. with their large elegant flowers, in great profuſion, for ſeveral months in ſummer; are garniſhed with pinnated rough leaves, of from three to five or ſeven lobes; and numerous large pentapetalous, very odoriferous flowers, compriſing many double varieties of ſingular beauty.

Claſs and order, *Icoſandria Polygynia.*

*Characters.*] CALIX is monophyllous, ventricoſe, and fleſhy below, and divided at top into five long, narrow, ſpear-ſhaped ſegments, two of which alternately, having appendices on their ſides, two alternately naked, and the fifth ſometimes appendiculated on one ſide only.—COROLLA, five obverſely heart-ſhaped petals, inſerted into the calix.—STAMINA, numerous ſhort capillary filaments, inſerted into the neck of the calix, and trigonous antheræ.—PISTILLUM, numerous germina in the bottom of the calix, and numerous very ſhort hairy ſtyles, ſtraitly compreſſed in the neck of the calix, and inſerted into the ſides of the germen, crowned by obtuſe ſtigmas.—PERICARPIUM, the fleſhy baſe of the calix becomes a turbinated, fleſhy, ſoft, unilocular berry, having numerous oblong hairy ſeeds, faſtened on each ſide to the calix.

The ſorts of Roſes are very numerous, and the botaniſts find it very difficult to determine, with accuracy, which are ſpecies, and which varieties, as well as which are varieties of the reſpective ſpecies, on which account Linnæus, and ſome other eminent authors, are inclined to think that there is only one real ſpecies of Roſe, which is the *Roſa Canina*, or Dog-Roſe of the hedges, &c. and that all the other ſorts are accidental varieties of it; however, according to the preſent Linnæan arrangement, they ſtand divided into fourteen ſuppoſed ſpecies, each deſcribed to have ſome particular mark of diſtinction, though in ſeveral ſorts, is not very conſpicuous, and agreeable to the

ſpecific

ſpecifie deſcription of the ſeveral ſpecies, each comprehends ſome varieties, which, in ſome ſorts are but few, others numerous.

The ſuppoſed ſpecies, and their varieties, according to the arrangement of modern botaniſts, are as follow:

[1]ROSA *Canina.*

*Canine Roſe, or Wild Dog-Roſe of the Hedges, or Hep-tree.*] Grows five or ſix feet high, having prickly-ſtalks and branches, pinnated, five or ſeven-lobed leaves, with aculeated foot-ſtalks; ſmooth pedunculi; oval, ſmooth germina, and ſmall ſingle-flowers.

*Varieties.*] Red-flowered canine Roſe—white-flowered.

They grow wild in hedges abundantly all over the kingdom: and are ſometimes admitted into gardens, a few to increaſe the variety of the ſhrubbery collection.

[2]ROSA *Alba.*

*Common White-Roſe.*] Grows five or ſix feet high, having a green ſtem and branches, armed with prickles; hiſpid pedunculi; oval ſmooth germina, and large white flowers.

*Varieties.*] Large double White Roſe—ſemi-double White Roſe—dwarf ſingle White Roſe—maidens-bluſh White Roſe, being large, produced in cluſters, and of a white and bluſh red colour.

[3]ROSA *Gallica.*

*Gallican Roſe, &c.*] Grows from about three or four to eight or ten feet high, in different varieties, pinnated three, five, or ſeven lobed leaves, and large red, and other coloured-flowers in different ſorts.

The ſpecific deſcription is.——Roſe, with hiſpid, prickly branches, and petioles; hiſpid pedunculi, and oval hiſpid germina.

*Varieties.*] This ſpecies is very extenſive in ſuppoſed varieties, bearing the above ſpecific diſtinction, ſeveral of which have been formerly conſidered as diſtinct ſpecies, but now ranged among the varieties of the Gallican Roſe, conſiſting of the following noted varieties.

*Common Red Officinal Roſe.*] Grows erect, about three or four feet high, having ſmall branches, with but few prickles; and large, ſpreading, half-double, deep-red flowers.

The flowers being aſtringent, are uſed in medicine, being gathered for that uſe while in the bud, or before they begin to open; and they fetch a good price at market, where they are ſold by the peck, or buſhel, and pay ſufficiently for the culture of a large quantity of plants, for which purpoſe the London gardeners plant them in cloſe ranges, forming low hedges, a foot or two high, keeping them down by an annual clipping in autumn; and they produce great quantities of flowers.

*Roſa Mundi, (Roſe of the World) or ſtriped Red Roſe.*] Is a variety of the common Red Roſe, growing but three or four feet high; having large ſpreading ſemi-double red flowers, beautifully ſtriped with white—and deep-red.

*York and Lancaſter variegated Roſe.*] Grows five, ſix, or eight feet high, or more; bearing variegated red flowers; conſiſting of a mixture of red and white; alſo frequently diſpoſed in elegant ſtripes, ſometimes in half of the flower, and ſometimes in ſome of the petals.

*Monthly Roſe.*] Grows about four or five feet high, with green, very prickly ſhoots; producing middle ſized, moderately double, delicate flowers, of different colours in the varieties.

*Varieties are.*] Common red-flowered Monthly Roſe—bluſh-flowered—white-flowered—ſtriped-flowered.—All of which blo both early and late, and often produce flowew ſeveral months in the year, as May, June, and July: and frequently again in Auguſt, or September, and ſometimes in fine mild ſeaſons, continues till November or December: hence the name Monthly Roſe.

It is generally the earlieſt blowing Roſe; but as it begins to ſhoot early in the ſpring, the buds are often cut by the froſt, ſo as to prevent their blowing fair and plenteouſly; the plants ſhould therefore have a ſomewhat ſheltered warm ſituation; ſome ſhould alſo be planted againſt a warm wall; and is a proper ſort to pot for forcing.

*Double Virgin Roſe.*] Grows five or ſix feet high, having greeniſh branches with ſcarce any ſpines; and with large, double, pale-red, very fragrant flowers.

*Red Damaſk Roſe.*] Grows eight or ten feet high, having greeniſh branches, armed with ſhort aculea; and moderately-double, fine ſoft-red, very fragrant flowers.

*White Damaſk Roſe.*] Grows eight or ten feet high, with greeniſh very prickly branches, and whitiſh-red flowers, becoming gradually of a whiter colour.

*Bluſh Belgic Roſe.*] Grows three or four feet high, or more; having greeniſh prickly branches, five or ſeven lobed leaves, and numerous, very double, bluſh-red flowers, with ſhort petals, evenly arranged.

*Red Belgic Roſe.*] Having greeniſh and red ſhoots and leaves, and fine double deep-red flowers.

*Velvet Roſe.*] Grows three or four feet high armed

armed with but few prickles; producing large velvet-red flowers, compriſing ſemi-double, and double varieties, all very beautiful Roſes.

*Marbled Roſe.*] Grows four or five feet high, having browniſh branches, with but few prickles; and large, double, finely-marbled, red-flowers.

*Red and Yellow Auſtrian Roſe.*] Grows five or ſix feet high, having ſlender, reddiſh branches, armed with ſhort, browniſh aculea; and with flowers of a reddiſh copper colour on one ſide, the other ſide yellow.

This is a curious variety, and the flowers aſſume a ſingularly agreeable appearance.

*Yellow Auſtrian Roſe.*] Grows five or ſix feet high, having reddiſh very prickly ſhoots; and numerous bright-yellow flowers.

*Double Yellow Roſe.*] Grows ſix or ſeven feet high; browniſh branches, armed with numerous large and ſmall yellowiſh prickles; and large very double yellow flowers.

*Frankfort Roſe.*] Grows eight or ten feet high, is a vigorous ſhooter, with browniſh branches, thinly armed with ſtrong prickles; and produces largiſh, double, purpliſh-red flowers, that blow irregularly, and have but little fragrance.

All the above ſorts are ſuppoſed to be varieties of the *Gallican Roſe*; though it is probable ſome of them may alſo appear to belong to other ſpecies, particularly to the *Roſa Centifolia*, and *Roſa Alba*.

[4]Rosa *Centifolia.*

*Hundred-leaved Red Roſe*, &c.] Grows from about three or four to ſix or eight feet high, in different ſorts, all of them hiſpid and prickly; pinnated three and five-lobed leaves; and large very double red flowers, having very numerous petals, and of different ſhades in the varieties.

Specific deſcription is,—Roſe with hiſpid and prickly ſtalks and branches, inermous, or unarmed petioles; hiſpid pedunculi, and oval hiſpid germina.

Varieties are,

*Common Dutch hundred-leaved Roſe.*] Grows three or four feet high, with erect greeniſh branches, but moderately armed with prickles; and large, remarkably double red-flower, with ſhort regularly arranged petals.

*Bluſh hundred-leaved Roſe.*] Grows like the other, with large, very double, pale-red flowers.

*Provence Roſe.*] Grows five or ſix feet, with greeniſh-brown, prickly branches, and very large double globular red flowers, with large petals folding over one another, more or leſs in the varieties.

*Varieties are.*] Common Red Provence Roſe, and Pale Provence Roſe; both of which having larger, and ſomewhat looſer petals than the following ſort. — Cabbage Provence Roſe; having the petals cloſely folded over one another like cabbages—Dutch Cabbage Roſe, very large, and cabbages tolerably—Chilling Provence Roſe—Great Royal Roſe, grows ſix or eight feet high, producing remarkably large, ſomewhat looſe, but very elegant flowers.—All theſe are large double red flowers, ſomewhat globular at firſt blowing, becoming gradually a little ſpreading at top, and are all very ornamental fragrant Roſes.

*Moſs Provence Roſe.*] Suppoſed a variety of the common Provence; grows erectly, four or five feet high, having browniſh ſtalks and branches, very cloſely armed with ſhort prickles, and double, crimſon-red flowers; having the calix and upper part of the peduncle ſurrounded with a rough moſſy-like ſubſtance, effecting a curious ſingularity.

This a fine delicate Roſe, of a high fragrance, which, together with its moſſy calix, renders it of great eſtimation as a curioſity.

All the above varieties are ſuppoſed to belong to the ſpecies *Roſa Centifolia*, which however is not poſitively aſcertained, as ſome of them ſometimes nearly ſhew themſelves varieties alſo of the *Roſa Gallica*, &c. However, they are all fine large double Roſes, of very numerous petals, cloſely arranged, and in ſeveral ſorts, cloſely folded over one another, particularly the common hundred-leaved Roſe, and Provence kinds; but the Cabbage Provence moſt of all; the Common Provence, and Cabbage-Roſe, are the moſt generally cultivated ſorts in moſt gardens, as being very elegant Roſes, as well as poſſeſs a remarkable fine fragrance: all the other varieties of this ſpecies have alſo a due ſhare of merit as capital Roſes, and will effect a delightful diverſity in a collection.

From the great multiplicity of the petals of this ſpecies, &c. it derives the name *Centifolia*, or hundred-leaved Roſe.

[5]Rosa *Cinnamomea.*

*Cinnamon Roſe.*] Grows five or ſix feet high, or more, with purpliſh branches, thinly aculeated; pinnated five or ſeven-lobed leaves, having almoſt inermous petioles; ſmooth pedunculi, and ſmooth globular germina; and ſmall purpliſh-red cinnamon-ſcented flowers, early in May.

*Varieties.*] With double flowers—ſingle-flowered.

[6]Rosa *Alpina.*

*Alpine inermous Roſe.*] Grows five or ſix feet

feet high, having ſmooth, or unarmed, reddiſh branches, pinnated ſeven-lobed ſmooth leaves, ſomewhat hiſpid pedunculi, oval germina, and deep-red ſingle flowers; appearing in May.

This ſpecies, as being free from all kind of armature, common to the other ſorts of Roſes, is eſteemed as a ſingularity; and from its inermous property, is often called the Virgin Roſe.

[7]Rosa *Carolina.*

*Carolina and Virginia Roſe*, &c.] Grows ſix or eight feet high, or more; having ſmooth, reddiſh branches, very thinly aculeated; pinnated, ſeven-lobed, ſmooth leaves, with prickly foot-ſtalks; ſomewhat hiſpid, pedunculi, globoſe hiſpid germen, and ſingle red flowers, in cluſters, appearing moſtly in Auguſt and September.

*Varieties.*] Dwarf Penſylvanian Roſe, with ſingle and double red flowers—American pale-red Roſe.

This ſpecies and varieties grow naturally in different parts of North America; they effect a fine variety in our gardens, and are in eſtimation for their ſerotinous, or late-flowering property, as they often continue in blow from Auguſt until October; and the flowers are ſucceeded by numerous, red, berry-like heps in autumn, cauſing a variety all winter.

[8]Rosa *Villoſa.*

*Villoſe Apple-bearing Roſe.*] Grows ſix or eight feet high, having ſtrong, erect, browniſh, ſmooth branches; aculeated ſparſedly pinnated, ſeven-lobed, villoſe, or hairy-leaves, downy underneath, with prickly foot-ſtalks; hiſpid peduncles, globular, prickly germen; and large ſingle red flowers, ſucceeded by large, round, prickly heps, as big as little apples.

This ſpecies merits admittance in every collection as a curioſity for the ſingularity of its fruit, both for variety and uſe; for it having a thick pulp of an agreeable acid reliſh, is often made into a tolerable good ſweet-meat.

[9]Rosa *Pimpinelliſolia.*

*Burnet-leaved Roſe.*] Grows about a yard high, aculeated ſparſedly; ſmall, neatly pinnated, ſeven-lobed leaves, having obtuſe folioles, and rough petioles; ſmooth peduncles, globular, ſmooth germen; and ſmall ſingle flowers.

*Varieties.*] With red flowers — and with white flowers.

They grow wild in England, &c. and are cultivated in ſhrubberies for variety.

[10]Rosa *Spinoſiſſima.*

*Moſt Spinous, Dwarf Burnet-leaved Roſe, commonly called Scotch Roſe.*] Grows but two or three feet high, very cloſely armed with ſpines; ſmall, neatly pinnated, ſeven-lobed leaves, with prickly foot-ſtalks; prickly pedunculi; oval, ſmooth germen; and numerous, ſmall, ſingle flowers, ſucceeded by round, dark-purple heps.

*Varieties.*] Common white-flowered—red-flowered — ſtriped-flowered — marbled-flowered.

They grow naturally in England, and Scotland, &c. the firſt variety riſes near a yard high, the others but one or two feet; all of which are ſingle-flowered; but the flowers being numerous all over the branches, make a pretty appearance in a collection.

[11]Rosa *Eglanteria.*

*Eglantine Roſe, or Sweet Briar.*] Grows five or ſix feet high, having green branches, armed with ſtrong ſpines ſparſedly; pinnated, ſeven-lobed, odoriferous leaves, with acute folioles, and rough foot-ſtalks; ſmooth pedunculi, globular ſmooth germina; and ſmall pale-red flowers.

*Varieties.*] Common ſingle-flowered—ſemi-double-flowered — double-flowered — bluſh double-flowered—yellow-flowered.

This ſpecies grows naturally in ſome parts of England, and in Switzerland.

It claims culture in every garden for the odoriferous property of its leaves; and ſhould be planted in the borders, and other compartments contiguous to walks, or near the habitation, where the plants will impart their refreſhing fragrance very profuſely all around; and the young branches are excellent for improving the odour of noſe-gays and bow-pots; and for which purpoſe the London gardeners raiſe great quantities for ſale, of the common ſingle kind, which they effect by ſeed, ſowing it in autumn, in drills near an inch deep; and the plants may either remain, or be tranſplanted where required. See the *Propagation.*

But the double-flowered and yellow variety are continued the ſame, only by ſuckers and layers.

[12]Rosa *Moſchata.*

*Muſk-Roſe; ſuppoſed to be a Variety only of the Ever-green Muſk-Roſe.*] Hath weak, ſmooth, green ſtalks and branches, riſing by ſupport, from ſix to eight or ten feet high, or more, thinly armed with ſtrong ſpines; pinnated, ſeven-lobed, ſmooth leaves, with prickly foot-ſtalks; hiſpid peduncles; oval hiſpid germen;

armed with but few prickles; producing large velvet red flowers, compriſing ſemi-double, and double varieties, all very beautiful Roſes.

*Marbled Roſe.*] Grows four or five feet high, having browniſh branches, with but few prickles; and large, double, finely-marbled, red-flowers.

*Red and Yellow Auſtrian Roſe.*] Grows five or ſix feet high, having ſlender, reddiſh branches, armed with ſhort, browniſh aculea; and with flowers of a reddiſh copper colour on one ſide, the other ſide yellow.

This is a curious variety, and the flowers aſſume a ſingularly agreeable appearance.

*Yellow Auſtrian Roſe.*] Grows five or ſix feet high, having reddiſh very prickly ſhoots; and numerous bright-yellow flowers.

*Double Yellow Roſe.*] Grows ſix or ſeven feet high; browniſh branches, armed with numerous large and ſmall yellowiſh prickles; and large very double yellow flowers.

*Frankfort Roſe.*] Grows eight or ten feet high, is a vigorous ſhooter, with browniſh branches, thinly armed with ſtrong prickles; and produces largiſh, double, purpliſh-red flowers, that blow irregularly, and have but little fragrance.

All the above ſorts are ſuppoſed to be varieties of the *Gallican Roſe*; though it is probable ſome of them may alſo appear to belong to other ſpecies, particularly to the *Roſa Centifolia*, and *Roſa Alba*.

[4]Rosa *Centifolia.*

*Hundred-leaved Red Roſe*, &c.] Grows from about three or four to ſix or eight feet high, in different ſorts, all of them hiſpid and prickly; pinnated three and five-lobed leaves; and large very double red flowers, having very numerous petals, and of different ſhades in the varieties.

Specific deſcription is,—Roſe with hiſpid and prickly ſtalks and branches, inermous, or unarmed petioles; hiſpid pedunculi, and oval hiſpid germina.

Varieties are,

*Common Dutch hundred-leaved Roſe.*] Grows three or four feet high, with erect greeniſh branches, but moderately armed with prickles; and large, remarkably double red-flower, with ſhort regularly arranged petals.

*Bluſh hundred-leaved Roſe.*] Grows like the other, with large, very double, pale-red flowers.

*Provence Roſe.*] Grows five or ſix feet, with greeniſh-brown, prickly branches, and very large double globular red flowers, with large petals folding over one another, more or leſs in the varieties.

*Varieties are.*] Common Red Provence Roſe, and Pale Provence Roſe; both of which having larger, and ſomewhat looſer petals than the following ſort. — Cabbage Provence Roſe; having the petals cloſely folded over one another like cabbages — Dutch Cabbage Roſe, very large, and cabbages tolerably — Chilling Provence Roſe — Great Royal Roſe, grows ſix or eight feet high, producing remarkably large, ſomewhat looſe, but very elegant flowers. — All theſe are large double red flowers, ſomewhat globular at firſt blowing, becoming gradually a little ſpreading at top, and are all very ornamental fragrant Roſes.

*Moſs Provence Roſe.*] Suppoſed a variety of the common Provence; grows erectly, four or five feet high, having browniſh ſtalks and branches, very cloſely armed with ſhort prickles, and double, crimſon-red flowers; having the calix and upper part of the peduncle ſurrounded with a rough moſſy-like ſubſtance, effecting a curious ſingularity.

This a fine delicate Roſe, of a high fragrance, which, together with its moſſy calix, renders it of great eſtimation as a curioſity.

All the above varieties are ſuppoſed to belong to the ſpecies *Roſa Centifolia*, which however is not poſitively aſcertained, as ſome of them ſometimes nearly ſhew themſelves varieties alſo of the *Roſa Gallica*, &c. However, they are all fine large double Roſes. of very numerous petals, cloſely arranged, and in ſeveral ſorts, cloſely folded over one another, particularly the common hundred-leaved Roſe, and Provence kinds; but the Cabbage Provence moſt of all; the Common Provence, and Cabbage-Roſe, are the moſt generally cultivated ſorts in moſt gardens, as being very elegant Roſes, as well as poſſeſs a remarkable fine fragrance: all the other varieties of this ſpecies have alſo a due ſhare of merit as capital Roſes, and will effect a delightful diverſity in a collection.

From the great multiplicity of the petals of this ſpecies, &c. it derives the name *Centifolia*, or hundred-leaved Roſe.

[5]Rosa *Cinnamomea.*

*Cinnamon Roſe.*] Grows five or ſix feet high, or more, with purpliſh branches, thinly aculeated; pinnated five or ſeven-lobed leaves, having almoſt inermous petioles; ſmooth pedunculi, and ſmooth globular germina; and ſmall purpliſh-red cinnamon-ſcented flowers, early in May.

*Varieties.*] With double flowers—ſingle-flowered.

[6]Rosa *Alpina.*

*Alpine inermous Roſe.*] Grows five or ſix feet

feet high, having ſmooth, or unarmed, reddiſh branches, pinnated ſeven-lobed ſmooth leaves, ſomewhat hiſpid pedunculi, oval germina, and deep-red ſingle flowers; appearing in May.

This ſpecies, as being free from all kind of armature, common to the other ſorts of Roſes, is eſteemed as a ſingularity; and from its inermous property, is often called the Virgin Roſe.

[7]Rosa *Carolina.*

*Carolina and Virginia Roſe*, &c.] Grows ſix or eight feet high, or more; having ſmooth, reddiſh branches, very thinly aculeated; pinnated, ſeven-lobed, ſmooth leaves, with prickly foot-ſtalks; ſomewhat hiſpid, pedunculi, globoſe hiſpid germen, and ſingle red flowers, in cluſters, appearing moſtly in Auguſt and September.

*Varieties.*] Dwarf Penſylvanian Roſe, with ſingle and double red flowers—American pale-red Roſe.

This ſpecies and varieties grow naturally in different parts of North America; they effect a fine variety in our gardens, and are in eſtimation for their ſerotinous, or late-flowering property, as they often continue in blow from Auguſt until October; and the flowers are ſucceeded by numerous, red, berry-like heps in autumn, cauſing a variety all winter.

[8]Rosa *Villoſa.*

*Villoſe Apple-bearing Roſe.*] Grows ſix or eight feet high, having ſtrong, erect, brownish, ſmooth branches; aculeated ſparſedly pinnated, ſeven-lobed, villoſe, or hairy-leaves, downy underneath, with prickly foot-ſtalks; hiſpid peduncles, globular, prickly germen; and large ſingle red flowers, ſucceeded by large, round, prickly heps, as big as little apples.

This ſpecies merits admittance in every collection as a curioſity for the ſingularity of its fruit, both for variety and uſe; for it having a thick pulp of an agreeable acid reliſh, is often made into a tolerable good ſweet-meat.

[9]Rosa *Pimpinelliſolia.*

*Burnet-leaved Roſe.*] Grows about a yard high, aculeated ſparſedly; ſmall, neatly pinnated, ſeven-lobed leaves, having obtuſe folioles, and rough petioles; ſmooth peduncles, globular, ſmooth germen; and ſmall ſingle flowers.

*Varieties.*] With red flowers — and with white flowers.

They grow wild in England, &c. and are cultivated in ſhrubberies for variety.

[10]Rosa *Spineſiſſima.*

*Moſt Spinous, Dwarf Burnet-leaved Roſe, commonly called Scotch Roſe.*] Grows but two or three feet high, very cloſely armed with ſpines; ſmall, neatly pinnated, ſeven-lobed leaves, with prickly foot-ſtalks; prickly pedunculi; oval, ſmooth germen; and numerous, ſmall, ſingle flowers, ſucceeded by round, dark-purple heps.

*Varieties.*] Common white-flowered — red-flowered — ſtriped-flowered — marbled-flowered.

They grow naturally in England, and Scotland, &c. the firſt variety riſes near a yard high, the others but one or two feet; all of which are ſingle-flowered; but the flowers being numerous all over the branches, make a pretty appearance in a collection.

[11]Rosa *Eglanteria.*

*Eglantine Roſe, or Sweet Briar.*] Grows five or ſix feet high, having green branches, armed with ſtrong ſpines ſparſedly; pinnated, ſeven-lobed, odoriferous leaves, with acute folioles, and rough foot-ſtalks; ſmooth pedunculi, globular ſmooth germina; and ſmall pale-red flowers.

*Varieties.*] Common ſingle-flowered—ſemi-double-flowered — double-flowered — bluſh double-flowered—yellow-flowered.

This ſpecies grows naturally in ſome parts of England, and in Switzerland.

It claims culture in every garden for the odoriferous property of its leaves; and ſhould be planted in the borders, and other compartments contiguous to walks, or near the habitation, where the plants will impart their refreſhing fragrance very profuſely all around; and the young branches are excellent for improving the odour of noſe-gays and bow-pots; and for which purpoſe the London gardeners raiſe great quantities for ſale, of the common ſingle kind, which they effect by ſeed, ſowing it in autumn, in drills near an inch deep; and the plants may either remain, or be tranſplanted where required. See the *Propagation.*

But the double flowered and yellow variety are continued the ſame, only by ſuckers and layers.

[12]Rosa *Moſchata.*

*Muſk-Roſe; ſuppoſed to be a Variety only of the Ever-green Muſk-Roſe.*] Hath weak, ſmooth, green ſtalks and branches, riſing by ſupport, from ſix to eight or ten feet high, or more, thinly armed with ſtrong ſpines; pinnated, ſeven-lobed, ſmooth leaves, with prickly foot-ſtalks; hiſpid peduncles; oval hiſpid germen;

and all the branches terminated by large umbellate cluſters, of pure-white, muſk-ſcent d flowers in Auguſt, &c.

[13]Rosa *Sempervirens.*

*Sempervirent, or Ever-green Muſk Roſe.*] Hath ſomewhat trailing ſtalks and branches, riſing by ſupport five or ſix feet high, or more, having a ſmooth bark, armed with prickles; pinnated, five-lobed, ſmooth, ſhining, evergreen leaves, with prickly petioles; hiſpid pedunculi; oval hiſpid germen; and all the branches terminated by cluſters of pure-white flower of a muſky fragrance; appearing the end of July, and in Auguſt.

The ſempervirent property of this elegant ſpecies, renders it a curioſity among the Roſy tribe; it alſo makes a fine appearance as a flowering ſhrub.

*Variety.*] Deciduous Muſk-Roſe, abovementioned; ſuppoſed to be a variety of this ſpecies.

This ſpecies and variety flower in Auguſt; remarkable for producing them numerouſly in cluſters, continuing in ſucceſſion till October or November. They ſhould generally be planted againſt ſome wall, or be allowed ſome ſupport.

All the above thirteen ſpecies of *Roſa*, and their reſpective varieties, are of the ſhrub kind; all deciduous, except the laſt ſort, and of hardy growth, ſucceed in any common ſoil and ſituation, and flower annually in great abundance from May till October, in different ſorts; though the general flowering ſeaſon for the principal part of them is June and July; but in a full collection of the different ſpecies, the blow is continued in conſtant ſucceſſion ſeveral months, even ſometimes from May till near Chriſtmas; producing their flowers univerſally on the ſame years ſhoots, riſing from thoſe of the year before, generally on long pedunculi, each terminated by one or more Roſes, which, in their characteriſtic ſtate, conſiſts each of five large petals, and many ſtamina; but in the doubles, the petals are very numerous; and in ſome ſorts, the flowers are ſucceeded by fruit ripening to a red colour in autumn and winter; from the ſeed of which the plants may be raiſed; but the moſt certain and eligible mode of propagating moſt of the ſorts is by ſuckers and layers; and by which methods they may be increaſed very expeditiouſly in great abundance.——See their *Propagation.*

All theſe ſhrubs are fine ornamental furniture for every garden, in the exceeding beauty and fragrance of their elegant flowers; and as they will all grow any where without trouble, and may be obtained at all the nurſeries, at moderate rates, every garden may be eaſily furniſhed with a full collection; and being poſſeſſed of a few of each ſort, they will moſt of them ſoon encreaſe the ſtock conſiderably by ſuckers.

The ſeaſon for planting all the ſorts is, any time in open weather from October till March, and they will all flower in perfection the following ſummer; but if occaſion requires they may be tranſplanted ſo late as any time in April, or even the beginning of May, which late planting is ſometimes deſignedly practiſed to a few annually, to obtain a late bloom in autumn; however, the earlier the planting is performed, the ſtronger the plants will flower.

When theſe ſhrubs are deſigned for the ſhrubbery, and common flower borders, they ſhould be planted ſingly; and may be trained with a ſingle ſtem, one, two, or more feet high, and then encouraged to branch out into a buſhy head; though when they are required to exhibit a more buſhy growth, they are often ſuffered to branch away immediately from the bottom; as they will blow plentifully in any mode off training; however, I ſhould adviſe keeping them to a ſingle ſtem below, and let them form a buſhy head upward. As to their culture, very little is required; which is only clearing the bottom from ſuckers, in winter, which will ſerve for new plants, and thin the head occaſionally, when grown too thick and confuſed, and reduce any long rambling ſhoot, and cut out dead wood; but as theſe ſhrubs produce their flowers generally on the young ſhoots, ſome clip them down a little annually in autumn or winter, to force out a greater quantity of flowers, which however will probably be proportionally ſmaller; though thoſe who want them for ſale in the markets, &c. endeavour to procure as large a quantity as poſſible.

But where large quantities of the flowers are required particularly for ſale, as is the caſe about London, the gardeners generally plant the ſhrubs in cloſe rows, forming a ſort of hedge, putting them in by *trench-planting*, a foot diſtance in the row; and in their culture keep them down to one, two, or three feet high, according to the ſorts, by ſhearing or clipping them annually, in autumn or winter, at top and ſides, in order to force out a greater quantity of laterals the following year for flowering, as before obſerved.



Some

Some plants of the beſt ſorts may alſo be planted againſt a warm wall, to forward their ſhooting for an early bloom; a few of the Monthly Roſes in particular, alſo the Provence kinds, and cinnamon Roſe, &c. But as the Monthly Roſe ſhoots early in the ſpring, as formerly hinted, it is always proper to have ſome plants of that ſort againſt ſome warm fence, both for ſhelter, and to forward the bloom.

A few plants of the beſt ſorts of Roſes ſhould alſo be potted to move occaſionally to adorn any particular compartment.

Likewiſe, where there is convenience of forcing-frames, or hot-houſes, &c. it is proper alſo to pot ſome prime ſorts to force for an early ſpring bloom; for by aid of the above departments of artificial heat, Roſes may be blowed almoſt any time in winter, or early in ſpring; for which purpoſe, having ſome plants of the Monthly Roſe, common Provence, and Moſs Provence, or any other choice ſorts, in pots, which in winter, may be placed in any forcing-frames, worked either by dung, bark, or fire heat, or placed in a hot-houſe, they may be brought to flower in January, February, and March, and continued in ſucceſſion till the plants in the natural ground begin to flower, by having different ſupplies of plants placed for forcing at two or three weeks interval. A quantity of plants ſhould generally be potted for this uſe annually, and if they have a ſummer's growth in the pots, plunged in the ground, previous to the time of forcing, they will be more firmly rooted, ſo as to flower in greater perfection. See FORCING-FRAME.

Many of the gardeners about London erect forcing-frames, or glaſs-houſes, with bark-pits on purpoſe for forcing Roſes, as they are generally ready ſale, at an early ſeaſon, both the pots of plants in flower, and the Roſes gathered as noſegays; and fetch an extraordinary great price, which pays ſufficiently for forcing.

*Method of Propagation.*

The propagation of all the ſorts is by ſuckers—layers—budding—and ſome ſorts by ſeeds.—But ſuckers is the moſt common and expeditious method for propagating moſt of the ſpecies.

By Suckers.—Moſt of the ſorts of Roſes ſend up many ſuckers annually from the root, attaining from one or two to three or four feet height, or more, in one ſummer, and by theſe the ſhrubs may be expeditiouſly propagated in great plenty; they may be taken up in autumn, winter, or early inſpring, with ſome fibres to their bottom; and the ſtrongeſt may be planted out finally, and the weakeſt in nurſery lines for a year or two, or longer; they will readily grow, and will moſt of them produce flowers the following ſummer.

When theſe ſhrubs have grown into large bunches, with many ſuckers grown up to ſtems from the root, the whole may be taken up and ſlipped, or divided into ſo many ſeparate plants, and planted out, as above.

Obſerve, that as the Moſs Roſe, Muſk Roſe, Apple-bearing Roſe, and ſome others, furniſh ſuckers but ſparingly, ſo in default thereof muſt have recourſe to layers, or budding; particularly for the Moſs Provence.

By Layers.—All the ſorts of theſe plants will grow by layers of the young ſhoots; and is an effectual method of propagation, for ſuch ſorts in particular, that ſparingly furniſh ſuckers, as the Moſs Provence, &c. as aforeſaid; and that to obtain plenty of ſhoots for laying, a quantity of the plants ſhould be planted for ſtools; which being headed down low, they will throw out plenty of ſhoots near the ground in ſummer, for laying in autumn or winter following, by ſlit or twiſt-laying, they will be rooted by next autumn, and fit for tranſplantation, in nurſery rows; though ſometimes the Moſs Roſe, &c. require two years before they are tolerably well rooted; but of theſe ſorts, you may alſo try layers of he young tender ſhoots of the year, layed in ſummer, any time in June, they will probably root a little the ſame ſeaſon. However, the layers of all the ſorts, after being properly rooted, ſhould be taken up in autumn, and planted in the nurſery, to have a one or two years growth, or to remain till wanted.

By Budding.—This is ſometimes practiſed in propagating ſome choice ſorts that ſeldom ſend up ſuckers, ſuch as the Moſs Provence, &c. as aforeſaid; alſo, when intended to have two, three, or more different ſorts of Roſes upon the ſame tree, for curioſity; working them upon the Frankfort, or any other ſtrong-ſhooting Roſe ſtocks raiſed from ſuckers.

By Seeds.—This is ſometimes practiſed to try to obtain new varieties; alſo ſometimes for raiſing ſome particular permanent ſpecies, ſuch as the Canine Roſe, Burnet-leaved Roſe, Scotch Roſe, Apple-bearing Roſe, ſingle Sweet Briar, and ſuch others as continue the ſame by ſeedlings; ſowing them generally in au-

tumn ſoon after they are ripe, and they will ſometimes riſe the following ſpring; as if not ſowed till the ſpring ſeaſon, moſt of the ſorts are apt to remain till the ſecond year before they riſe freely; ſow them however, in any bed of light earth, either in ſhallow drills, or all over the ſurface, covering them half an inch deep; and when the ſeedlings are a year old, tranſplant them in nurſery-rows.

Obſerve however, that the double kinds, and other particular varieties of the ſpecies in general, caannot be continued the ſame with certainty by ſeeds, ſo muſt always be propagated by ſuckers or layers, &c.

But remark the common ſingle Sweet Briar, when required in any conſiderable quantity, ſhould generally be raiſed from ſeed, ſowing it in drills half an inch deep, either to remain, or for tranſplantation; though when deſigned to form a ſort of hedge of this plant, to produce a crop of ſhoots to cut for the ſupply of markets during the ſummer, it is eligible to ſow the ſeed at once in a drill where the plants are to ſtand.

ROSMARINUS, Roſemary.

It conſiſts of one hardy ſhrubby ever-green, compriſing ſome varieties, proper for the kitchen garden and ſhrubbery; all of which are adorned with narrow ſtiff leaves, and numerous, ſmall, monopetalous, ringent flowers, along the ſides of the ſhoots.

Claſs and order, *Diandria Monogynia.*

*Characters.*] CALIX, is monophyllous, the mouth erect and bilabiated, the upper lip, being entire, the under one bifid.—COROLLA, is monopetalous, tubular below, and ringent above, having the upper lip ſhort and bifid, and the under one reflexed and trifid, with the middle ſegment largeſt.—STAMINA, two ſubulate filaments, inclining towards the upper lip, and ſimple anthera.—PISTILLUM, a quadrifid germen; a ſtyle like the ſtamina of the ſame length and ſituation, and a ſimple acute ſtigma.—PERICARPIUM none, four oval ſeeds lodged in the calix.

The ſpecies is,

ROSMARINUS *Officinalis.*

*Common Officinal Roſemary.*] Hath a ſhrubby ſtem branching numerouſly from the bottom upward, growing five or ſix feet high, cloſely garniſhed with linear ſtiff leaves; and numerous ſmall purpliſh flowers all along the upper part of the branches.

*Varieties.*] Common narrow-leaved Roſemary—broad-leaved—ſilver-ſtriped-leaved—gold-ſtriped-leaved.

All the varieties are tolerably hardy ever-greens, though the common green ſorts are the hardieſt; the ſtriped kinds are liable to ſuffer by hard froſts, if much expoſed, or planted in in wet ground, ſo ſhould have a warm ſituation and dry ſoil; ſome of theſe variegated kinds ſhould alſo be potted, in order to have ſhelter of a green-houſe in winter. It ſhould alſo be obſerved, that all the varieties of Roſemary ſhould generally have a dry ſoil; and if poor, ſandy, gravelly, or rubbiſhy, they will be more durable than in moiſt, rich land; in wet ſoils in particular, they are very liable to periſh in winter. However, all the ſorts will ſucceed in any common earth in a dry ſituation.

As to their uſes in gardening, the common green ſorts are employed as medical plants, &c. and both green and variagated kinds claim admittance in the ſhrubbery, to increaſe the variety in the ever-green collection, allowing them a dry ſoil, and the ſtriped ſorts in particular a warm ſituation, as above obſerved; plant ſome of theſe ſorts alſo againſt a warm fence, as a place of greater ſhelter to protect them in winter.

But it is proper always to keep a few plants of the ſtriped ſorts in pots, and place them in the green-houſe collection for winter ſhelter; and where they will alſo effect a pretty variety.

The leaves and flowers of Roſemary are uſed in medicine.

*Method of Propagation.*

They are all eaſily propagated by ſlips or cuttings, and by layers.

By Slips and Cuttings.—In March or April, ſlip or cut off a quantity of young ſhoots, from about five or ſix to eight or ten inches long, and ſtrip off the lower leaves; then plant them in a border of light earth, in rows a foot aſunder, and give a good watering, repeating it frequently till they are rooted, which they will effect in a ſhort time, the ſame year, ſhoot at top, and become tolerable little plants by autumn, when about the begining or middle of September, or in ſpring following, they may be tranſplanted where they are deſigned to remain.

By Layers.—In ſpring or autumn, lay down any of the convenient lower young branches in the earth, they will be well rooted by autumn following.

ROYENA, African Bladder Nut.

The plants are ſhrubby ever-green exotics for the green-houſe collection; garniſhed with oval, and ſpear-ſhaped leaves; and monopetalous,

nopatalous, five-parted reflexed flowers along the ſides of the branches.

Claſs and order, *Decandria Digynia.*

*Characters.*] CALIX, is monophyllous, five-parted at top, and permanent.—COROLLA, is monopetalous, with a tube the length of the calix, and divided above into five oval reflexed ſegments.—STAMINA, ten very ſhort filaments, having oblong didymous erect antheræ.—PISTILLUM, an oval germen, two ſtyles, and ſimple ſtigma.—PERICARPIUM, an oval quadrifulcated, and quadrivalved unilocular capſule, having four oblong triangular nuts.

The ſpecies are,

[1]ROYENA *lucida.*

*Lucid African Bladder Nuts.*] Hath a ſhrubby upright ſtem, branching eight or ten feet high; oval, ſomewhat rough but ſhining green leaves, alternately; and white flowers at the ſides of the branches.

[2]ROYENA *Glabra.*

*Glabrous African Bladder Nut.*] Hath a ſhrubby upright ſtem, branching five or ſix feet high; ſmall, lanceolate, ſmooth leaves; and ſmall white flowers at the ſides of the branches.

[3]ROYENA *Hirſuta.*

*Hairy African Bladder Nut.*] Hath a ſhrubby upright ſtem, branching alternate-ways, ſix or ſeven feet high, lanceolate hairy leaves; and purpliſh flowers at the ſides of the branches.

Theſe three ſhrubs being natives of the Cape of Good Hope, require ſhelter here in winter, ſo muſt always be kept in pots, and placed among the green-houſe plants; where they will form a good variety, as ever-greens; and will flower in July or Auguſt; but the flowers are ſmall, and of but little beauty, ſucceeded ſometimes by ripe capſules, particularly the firſt and ſecond ſorts; their culture is the ſame as other ſhrubby green-houſe plants.

They are propagated by ſeed, layers, and cuttings.

By Seed.—Sow it in ſpring, in pots, and plunge them in a bark-bed, or other hot-bed; and when the plants are three or four inches high, pot them off ſeparately.

By Layers.—Lay the young ſhoots of the year in ſummer, as they are unapt to ſtrike in the older wood.

By Cuttings.—In ſpring, plant ſome young ſhoots in pots, and plung them in a hot-bed.

RUBIA, Madder.

This genus conſiſts of two hardy herbaceous perennials, valuable for their roots, as a moſt uſeful commodity in dying red; they having thick ſucculent roots; long, thick procumbent ſtalks; ſpear-ſhaped radiant leaves; and campanulate, four-parted, yellow flowers, in ſpikes at the ends of the branches.

Claſs and order, *Tetrandria Monogynia.*

*Characters.*] CALIX, is ſmall, placed on the germen, and four-parted.—COROLLA, is monopetalous, bell-ſhaped, and four-parted at top.—STAMINA, four awl-ſhaped, ſhort filaments, having ſimple anthera.—PISTILLUM, a didymous germen under the calix; ſlender ſtyle bifid at top, and headed ſtigmas.—PERICARPIUM, two ſmooth berries joined together; each having one roundiſh umbilicated ſeed.

The ſpecies are,

[1]RUBIA *Tinctorum.*

*Common Dying Madder.*] Hath a long, thick, fibrated, fleſhy, reddiſh root, ſending up large four-cornered, jointed, procumbent ſtalks, five or ſix feet long, branching by pairs, croſſing alternately; garniſhed at each joint with ſix ſpear-ſhaped leaves in a verticillus, or radius; and ſmall yellow flowers, collected in looſe ſpikes at the ſides and ends of the branches.

It is a native of Italy, and about Montpelier in France, but grows freely here in the open ground.

[2]RUBIA *Peregrina.*

*Wild quaternate-leaved Madder.*] Hath thickiſh, fibrated, ſpreading roots; ſlender, four-cornered, procumbent, branchy ſtalks; garniſhed at each joint with quarternate, ſhort, rough leaves, and cluſters of yellow flowers.

This ſort is ſuppoſed to be a native of England, as it is not known to grow naturally in any other part of the world.

Both theſe ſpecies of Madder are herbaceous, of hardy growth; perennial in root, ſend up ſtalks in ſpring, and flower in June and July, ſucceeded by ſeeds in autumn; but thoſe of the *Rubia Tinctorum*, do not always ripen in England; it however multiplies exceedingly by ſuckers for propagation.

Theſe plants are ſometimes cultivated in gardens, in any open compartments, for variety.

But the chief merit of the plants is in their roots, to uſe for dying red, &c. And are alſo uſed in medicine, which taken inwardly, tinges the urine of a deep-red colour; but the *Rubia Tinctorum* in particular, is in greateſt eſtimation for the dyer's purpoſe. And is cultivated

tivated in great quantities in fields abroad, in Holland, &c. for the roots aforeſaid, as a very valuable commodity both for dyers and calico-printers; being propagated generally by ſuckers, or off-ſets, which are taken off in the ſpring, and planted in a light deep ſoil, in rows too feet aſunder, and require two or three years growth for the roots to attain perfection. They are alſo cultivated in ſome parts of England for profit, as they are hardy enough, and increaſe abundantly by off-ſets or ſuckers from the root, and are ſometimes raiſed in tolerable perfection. However, as in ſome parts, after repeated experiments in its cultivation, the crops have no ways anſwered the purpoſe, occaſioned probably by the ſoil not being ſuitable, or not properly planted and managed; therefore, at the firſt trial, it is adviſeable to plant only a ſmall quantity in different ſitu ations; and by obſerving the ſoil and method of culture of thoſe which ſucceeds beſt, it may a direction to the culture of larger quantities; and where crops of it ſucceed, it proves a very ſaleable article, and pays exceedingly well for its cultivation; and the roots may either be ſold to the dyers, or druggiſts, or thoſe who prepare them for uſe; though abroad the great Madder planters erect ſtoves and kilns for drying it; and ſtamping-mills for reducing it to powder, to render it more portable to ſend to diſtant countries; but the roots for home conſumption may alſo be uſed freſh for dying; firſt waſhing them clean, then cut to pieces, and pounded in a mortar, and then put into the cauldron, or dying copper.

*Their Propagation and Culture.*

They are propagated by off-ſets or ſuckers, ariſing from the roots of old plants in the ſpring; and ſhould be ſlipped off ſoon after they appear above ground; at which time, opening the earth round the roots, ſlip off the ſide-ſuckers with as much root part and fibres to each as poſſible, preſerving the tops entire; which ſhould be planted directly as adviſed below.

The ſeaſon for taking off the ſuckers and planting them is about the beginning, middle, or end of April, or beginning of May, when they appear above ground.

Obſerve, theſe plants delight in a light, rich, deep ſoil, or a light, deep, pliable, loamy land; and rather a ſomewhat low than high ſituation; which ſhould be deeply digged or ploughed in autumn, or winter; laying it in rough ridges to mellow and pulverize by the weather; and in ſpring levelled down for the reception of the plants; but for large quantities in fields, the ground ſhould be ploughed croſs-ways again, once or twice in the ſpring, and well harrowed.

Then in April, or early in May, provide a proper quantity of ſets, or ſuckers, as aforeſaid; and with a dibble plant them in rows two feet aſunder, and one diſtant in the row, putting each plant low enough in proportion to the length of its root, leaving moſt of the green top out of the ground, and cloſe the earth well about each ſet, as you go on: thus they will ſoon take root, and ſhoot at top. But ſome ſet theſe plants in beds, three rows length ways, at two feet diſtance, with wide alleys between bed and bed, in order for landing up the crown of the roots two or three inches deep, in winter.

In either mode of planting, they will ſhoot up into ſtalks the ſame year; but the roots will require two or three years growth before they are large enough for uſe; during which period, obſerve the following culture.

Keep them clean from weeds all the ſummer by broad-hoeing, in dry weather; and in autumn, when the ſtalks decay, cut them down, then ſlightly dig the ground between the rows, raiſing it ſomewhat ridge-ways along the rows of plants, an inch or two thick over their crowns; or if they are in beds, they may be landed up from the alleys the above depth. Next ſpring the roots will ſhoot up again ſtronger than before, and will ſoon cover the ground, and keep down weeds; in autumn following, the decayed haulm muſt be again cut down, and all weeds cleared away, ſlightly dig the ground, &c. as in the former year; and next ſpring the plants will ſtill riſe ſtronger, and the roots continue encreaſing in ſize; ſo as by the following October, having had three ſummers growth, they will be fit to take up for uſe.

The method of taking up the Madder-roots is by trenching the ground the way of the rows; beginning at one end of the ground, and open a two-feet wide trench cloſe along by the firſt row of plants, digging down to the depth of the roots to get them clean out to the bottom; then opening another trench cloſe to the next row, turning the earth thereof into the firſt; and ſo proceed trench and trench till the whole is taken up.

The Madder-roots thus taken up for uſe, are ſometimes uſed freſh for dying, preparing them by waſhing, and pounding them as before obſerved. But commonly when deſigned

for

for keeping, or to be ſent to a diſtance, are dried in ſome covered airy ſhed, then all mould being rubbed off, and the roots ſufficiently dry, they may then be ſold to thoſe who manufacture them for uſe, if not performed by the cultivator; which conſiſts of kiln drying them, or drying them in ſome ſtove-houſe, &c. then threſhed to beat off the outer ſkin, in order to ſeparate it from the inner part of the root, as being of inferior quality. The roots being then dried in a kiln about twenty-four hours, are removed to a mill, or pounding-houſe, where they are pounded in a long hollow oaken block, with ſtampers kept in motion by the mill; and when thus reduced to powder, is ſifted and put up in caſks for uſe.

But in Holland, where great quantities of this plant is cultivated, they have public kilns, mills, &c. where the cultivators ſend the roots to be manufactured. And there are treatiſes to be had here, exhibiting the kilns, mills, and other neceſſary accommodations for manufacturing this valuable material; together with full directions in the management thereof.

RUBUS, Bramble, or Raſpberry-buſh.

Conſiſts of under-ſhrubby and herbaceous perennials, valuable, ſome as fruit-bearing plants, and others for variety in the pleaſure ground, particularly the ſhrubby kinds; ſome being of erect growth, others long trailers, garniſhed with pinnated, ternate, and palmated leaves, in different ſpecies; and pentapetalous, icoſandrous flowers.

Claſs and order, *Icoſandria Polygynia.*

*Characters.*] CALIX, is monophyllous, five-parted and permanent. — COROLLA, five-roundiſh erecto-patent petals. — STAMINA, twenty or more ſhort filaments, having roundiſh compreſſed antheræ. — PISTILLUM, numerous germina, many capillary ſtyles from the ſides of the germens, crowned with permanent ſtigmas. — PERICARPIUM, a compound berry, compoſed of many roundiſh unilocular acini, each having one oblong ſeed.

There are about thirteen ſpecies, nine or ten of which are ligneous and ſhrubby; the others are ſomewhat herbaceous; but the moſt material ſorts are principally of the ligneous, or ſhrubby kind, and of which about five or ſix of the moſt noted ſpecies are cultivated in our gardens; the firſt of which *Rubus Idæus*, or Raſpberry-plant, is chiefly valued for its fruit; and the other ſorts as furniture for the ſhrubbery, &c. They are all deciduous plants of hardy growth, that ſucceed in any common ſoil and ſituation; and conſiſts of upright ligneous kinds, trailing ſhrubby kinds, and herbaceous kinds.

*Upright ligneous Kind.*

Under this head is compriſed the common Raſpberry-plant, and varieties; and other Raſpberry kinds. All of which riſing with ſeveral upright ligneous, or under-ſhrubby ſtems, from about three or four to ſix or ſeven feet high.

[1]RUBUS *Idæus.*

*Common Raſpberry Buſh.*] Riſes with ſeveral upright, ſtraight, ligneous, pithy ſtems from the root; four or five feet high, cloſely armed with ſhort prickles; pinnated, three and five-lobed rough leaves; and at the axillas and ends of the lateral ſhoots, ſmall cluſters of purpliſh and white flowers, ſucceded by ripe berries in July.

*Varieties.*] Common red Raſpberry—white-fruited Raſpberry — twice-bearing red, and white Raſpberry, producing the firſt crop of fruit in July, and the ſecond in September; and is eſteemed a curioſity — ſmooth Raſpberry, the ſtalks, &c. being devoid of armature.

The common red ſort grows wild in woods in England, but has been greatly improved by garden culture.

All the varieties bear plentifully, particularly the firſt three; they being all propagated by ſuckers, planted in any open ſituation, in rows four or five feet aſunder, and a yard diſtant in the rows, being planted in autumn, winter, or ſpring, they bear the ſummer following. Their mode of bearing is upon the year-old wood; that is, a ſupply of ſhoots riſing annually from the root; which, when a year old ſend out many ſmall laterals, and upon theſe the fruit is produced the ſame year; remarking the ſame individual ſhoots never bear but once; a ſucceſſion of young ſhoots or ſtems being ſent up annually from the root every ſummer for bearing; thoſe produced one year, bear the fruit the next, and then totally decay to the root, in winter following, they never ſurviving to bear a ſecond year, but are always ſucceeded by a plentiful ſupply that have ariſen from the bottom in ſummer for next year's bearing; ſo that every winter, all the decayed ſtalks that bore the fruit the preceding ſummer, muſt be broken down cloſe to the ground; they being readily diſtinguiſhed from the young ſucceſſion wood, which at the ſame time muſt be regularly thinned to four or five of the ſtrongeſt

ſhoots

ſhoots on each root; and theſe ſhould be topped to about a yard in height, or a little more or leſs, according to their ſtrength, and they will all branch out laterally the following ſpring; and upon the laterals the flowers and fruit are produced. — See the *Propagation and general Culture*.

The Raſpberry is in eſtimation both as eatable fruit, and for many culinary purpoſes, as for tarts, ſauces, &c. when ripe.

[2]RUBUS *Odorata*.

*Odoriferous Virginia flowering Raſpberry*.] Riſes with many upright, large, under-ſhrubby, brown, inermous ſtems, from the bottom, five or ſix feet high; very large ſimple palmated leaves; and the ſhoots terminated by many large purpliſh flowers, ſucceeded by ſmall red fruit; rarely ripening in England.

This plant is very ornamental, having beautiful large foliage, and numerous large flowers; continuing near two months, which renders it worthy of admittance in every ſhrubbery plantation; where it will multiply exceedingly by ſuckers ſent up annually from the root all around.

[3]RUBUS *Occidentalis*.

*Occidental, or Canada Black-fruited Raſpberry*.] Riſes with erect, ligneous, prickly, purpliſh ſtems four or five feet high; ternate leaves, hoary underneath, having taper foot-ſtalks; and the ſhoots terminated by cluſters of ſmall flowers, ſucceeded by ſmall black fruit.

*Trailing Shrubby Kinds.*

Conſiſts of the common Bramble, and varities; and ſome others of the Bramble kind, being moſtly ſhrubby trailers, of hardy growth, and deciduous.

[4]RUBUS *Fruticoſus*.

*Shrubby Rubus, or common Bramble of the Hedges*.] Hath very long, ſhrubby, trailing, channelled, greeniſh, and reddiſh ſtalks, cloſely armed with ſtrong crooked aculi; digitated, five- and three-lobed leaves, having prickly petioles; and all the lateral ſhoots terminated by cluſters of white flowers, ſucceeded by ripe black-berries in autumn.

*Varieties*.] Common Bramble, or Blackberry plant of the hedges—double bloſſomed Bramble of the gardens—white-fruited Bramble — inermous, or thornleſs Bramble — cut-leaved Bramble—ſtriped-leaved Bramble.

All theſe varieties are of trailing growth, with very long, luxuriant, durable ſhoots. The common wild bramble, or Blackberry plant, being the parent ſpecies, which grows wild on banks, and in field-hedges, almoſt every where; ſo is ſeldom admitted in gardens, except a plant or two for variety among the climbing-tribe, or where wilds or thickets are intended. But the double-bloſſomed Bramble, white-berried, and thornleſs kind, &c. being curioſities, they claim admittance in every ſhrubbery; and may be trained both as climbers, allowing them ſupport of buſhes or ſtakes; or may be trained as ſtandard ſhrubs, if ſtaked, and trimmed down at top, to cauſe them to ſhoot out into buſhy heads, continuing to reduce the rambling ſhoots as occaſion requires, to keep the head to the deſired form; and where any part of a garden is deſigned to repreſent wilds, &c. ſome plants of all the varieties ſhould be introduced, and ſuffered to ſhoot and run according to the courſe of nature.

[5]RUBUS *Cæſius*.

*Blue-berried Bramble, or Dewberry-buſh*.] Hath long, taper, ſlender, trailing, prickly-ſtalks; ternate, almoſt naked leaves; and whitiſh flowers at the ſides and ends of the branches, ſucceeded by large ſky-blue fruit in autumn.

It grows naturally in moiſt ſituations in England; and is ſometimes admitted into gardens for variety.

[6]RUBUS *Hiſpidus*.

*Hiſpid Canada Bramble*.] Hath long, ligneous, procumbent, hiſpid ſtalks; ternate, naked, cut, ſerrated leaves, with hiſpid foot-ſtalks.

*Herbaceous Perennial Kinds.*

Compriſes two dwarfiſh, ſomewhat herbaceous, durable plants of erect growth, riſing but a few inches high.

[7]RUBUS *Chamæmorus*.

*Chamæmorus Dwarf Mulberry, or Cloud-berry*.] Riſes with ſlender inermous ſtalks, ſix or eight inches high; garniſhed with two ſimple, lobated leaves; and the ſtalks terminated by one purple flower, ſucceeded by a ſmall black fruit, reſembling a mulberry.

It grows naturally in England and Scotland, &c. in high mooriſh ſituations.

[8]RUBUS *Arcticus*.

*Northern Rubus, or Dwarf Siberian Bramble*.] Riſes with erect inermous ſtalks, but three or four inches high; ternate leaves, and the ſtalks terminated by purple flowers, ſingly; ſucceeded by ſmall red fruit, having the ſmell and taſte of ſtrawberries.

All

All the above eight ſpecies of *Rubus*, are for the general part deciduous, the leaves coming out in the ſpring, and fall off in the winter; and they flower generally in June and July. The flowers are compoſed each of five roundiſh petals and numerous ſtamina, ſucceeded by roundiſh compound berries, each being compoſed of many ſmall acini of a pulpy juicy nature;—ripening from July till October, in different ſorts: remarking thoſe of the *Rubus Idæus* and varieties, are the principal ſorts for general uſe.

The plants of all the ſpecies are very hardy; the ligneous and ſhrubby kinds in particular, will proſper almoſt any where. But the herbaceous kinds, being naturally reſidents of mooriſh or fenny places, require ſome ſimilar ſituations when cultivated in gardens.

With reſpect to the merit of all the ſorts as garden plants; obſerve as follows.

The firſt ſpecies: *Common Raſpberry*, and varieties, demand culture in every garden for their fruit; particularly the common red kind, white ſort, and twice-bearing raſpberry; all of which are great bearers: but for the general plantations, chuſe principally the common red and the white kind, as being generally the greateſt bearers of all. Planting alſo a ſhare of the twice-bearing ſort, both as a curioſity, and for the ſake of its autumnal crops of fruit, which in favourable ſeaſons, ripen in tolerable perfection; obſerving to allow all the ſorts ſome open expoſure in the kitchen-garden, though they will proſper in almoſt any ſituation. It is however adviſeable to plant the general plantations moſtly in a free expoſure in rows, a yard and half aſunder: ſome plants may alſo be diſpoſed ſingly about the borders or ſhrubbery clumps, for variety: and, in all the modes of planting, they ſhould generally be kept to ſingle bunches of four or five ſtems on each root or ſtock. See their *Propagation and general Culture.*

The other ſeven ſpecies, are conſidered as plants of variety, for hardy plantations in the ſhrubbery: ſome of which are alſo very ornamental flowering plants; particularly the Virginian flowering Raſpberry, and the double bloſſomed Bramble; both of which, having great merit as furniture for ornamental compartments: and the white-berried Bramble is a great curioſity. All the other ſpecies and varieties ſerve to diverſify large collections.

*Propagation and Culture of the common Raſpberry and Varieties.*

The propagation of the common Raſpberry and varieties, is expeditiouſly effected by ſuckers from the root; all the ſorts ſending up great numbers on all ſides annually growing from three to four or five feet height the ſame year, and form proper plants by autumn or winter following, for tranſplanting for new plantations, and will all bear fruit the following ſummer.

Therefore, any time from October till March, in open weather, having recourſe to ſome good plantation of Raſpberry plants of ſome ſtanding; and proceed to take up a ſufficient quantity of laſt ſummer's ſuckers, that are ſituated around the outſide of the ſtools, or main ſtock, raiſing them carefully with plenty of fibres; and, having obtained a proper quantity, then let them be trimmed for planting, ſhortening any long ſtraggling roots, and, if any naked woody parts of the root of the old ſtool adhere, cut it off; obſerving at the ſame time, if one or more buds appear near the root, they being the embryo of future ſhoots, muſt be very carefully preſerved: and ſhorten each ſucker at top, to about two or three feet long, or more according to their ſtrength, they are then ready for planting: having previous to this, choſen an open ſpot of good ground, as before adviſed; and having well dunged and trenched it one or two ſpades deep, proceed to put in the plants above prepared, as ſoon as poſſible.

With a line mark out the diſtances for the plants, in rows, a yard and half diſtance, and a yard aſunder in the rows, which is conſiderably more than is commonly allowed: but, if planted much cloſer, the plants, as they ſend up numerous ſuckers in ſummer, would grow ſo cloſe, as to form quite a thicket, ſo as to exclude the due influence of ſun and air from the fruit, as well as to render it troubleſome to get between the rows, occaſionally to gather the produce; therefore allow the above diſtances: and having drawn lines accordingly, proceed with a ſpade, and open ſmall apertures in the ground, cloſe along the line, one for each plant, a yard aſunder, planting them as you go on, one in each hole erectly, covering in the roots properly with the earth, treading it moderately firm, to preſerve the upright poſition of the plants: obſerving, if the planting is performed late in the ſpring, it is adviſeable to give a good

watering, and repeat it occaſionally, till the plants have ſtruck freſh root.

Having thus made a plantation of Raſpberries, they will readily take root, and ſet to growing freely in the ſpring, they being naturally of a free growth, and moſt of them will bear tolerably the firſt ſummer; but in the ſecond they will bear a full crop in the utmoſt perfection.

As to their general culture, it conſiſts of the following operations — Keeping them clean from weeds all ſummer by broad-hoeing; giving them an annual dreſſing in autumn or winter, conſiſting of breaking down the decayed ſtems that bore the preceding ſummer; thinning the young ſucceſſion bearers; clearing away all intermediate ſuckers between thoſe of the main ſtocks, and then dig the ground between the rows of plants; obſerving the following particulars of the method of performing the operations of their annual dreſſing.

Previous to the above-mentioned annual dreſſing of Raſpberries, obſerve, as we before noticed of their mode of bearing, that as they produce a freſh ſupply of ſhoots or ſuckers every year from the bottom for bearing, thoſe produced one year, bear the next, then totally decay to the root in winter, there being at the ſame time a ſucceſſion of laſt ſummers ſhoots, on the ſame ſtools, for bearing the ſummer following: therefore, in the annual dreſſing, which may be performed any time from October till March, firſt proceed to clear out all the decayed ſtems, being laſt ſummer's bearers, breaking them down cloſe to the bottom; then examine the ſupply of young ſhoots for next year's bearing, ſelecting three or four, but not more than five or ſix of the ſtrongeſt on each ſtool, cutting all the others away cloſe to the ground: likewiſe draw up all ſtraggling ſuckers between the main plants; all of which remaining plants, ſhould be ſhortened according to their ſtrength, cutting them generally a little below the bend at top of the ſhoots, to about three or four feet in length, both to render them more robuſt, to ſupport themſelves more firmly upright in ſummer, and to promote a ſtronger ſupply of laterals for flowering and fruiting. Or if you ſhould chuſe to leave them longer, or at full length, thoſe of each ſtock may be plaited together, in order to ſupport each other erect: then having cleared away all the rubbiſh, let the ground between the rows be neatly dug one ſpade deep. As you proceed in digging, clear out all the roots of ſtraggling ſuckers between the rows, &c. leaving the earth cloſe and level about and between all the plants: thus far is the whole neceſſary culture of a plantation of Raſpberries, which muſt always be repeated annually, at the ſeaſons abovementioned.

Allow them a little manure of rotten dung once every other year, applying it in the winter dreſſing and dig it in one ſpade deep; it will add vigour to the plants, ſo as to continue them producing fruit in great perfection ſeveral years.

However, it is adviſeable to make a freſh plantation every four or five years, in a freſh ſpot of ground, as after that period of time, the plants, although they may continue ſhooting with tolerable vigour, yet they are apt to be leſs fruitful, and the fruit ſmaller than in younger plantations in a freſh prepared piece of ground.

*Propagation, &c. of the other Species.*

The propagation of the other ſpecies of Raſpberries, Bramble, &c. is by ſuckers, layers, cuttings, dividing the roots, &c. and the two herbaceous kinds alſo by ſeed.

By Suckers.——All the Raſpberry kinds in particular ſend up many ſuckers annually, and by which they may be propagated in great abundance, taking them up in autumn, winter, or ſpring, with roots, and the ſtrongeſt may be planted at once in the ſhrubbery, and the others in nurſery rows for a year or two, or till wanted.

By Layers.——All the Bramble kind are eaſily propagated by this method, laying the ſhoots almoſt any time, they will readily emit roots at every joint, and be fit to tranſplant in autumn following.

By Cuttings.——By this method alſo may the Brambles be propagated in autumn; cutting off ſome of the younger ſhoots, and divide them into lengths a foot long, and plant them in a ſhady border, many of them will ſtrike.

By dividing the Roots.——Any of the Raſpberry kind, &c. and the herbaceous ſpecies, when encreaſed into large bunches, may be divided or ſlipped into ſeveral diſtinct ſets, and plant them ſeparately.

By Seed.——As the two herbaceous ſpecies do not always encreaſe freely by roots in gardens, therefore, in default of which, procure ſome of the ripe fruit in autumn, or as ſoon as poſſible; and chuſing ſome moiſt ſituation,

either

either in a nurſery, or where you deſign the plants to remain, ſow the ſeed half an inch deep; obſerving, if ſome of the plants are permitted to remain where raiſed, they will probably be more proſperous than ſuch as are tranſplanted.

RUDBECKIA, Dwarf Amerian Sunflower.

This genus comprehends ſeveral herbaceous flowery perennials, and a biennial, ſerving to embelliſh the pleaſure ground; riſing with annual ſtalks, from about half a yard to ſix or eight feet high, garniſhed with oval, ſpear-ſhaped, and divided leaves; and the ſtalks terminated by large compound radiated flowers.

Claſs and order, *Syngeneſia Polygamia Fruſtanea.*

*Characters.*] CALIX, a general calix, compoſed of two orders of broad, plane, ſhort, ſcaly leaves, containing many florets.—COROLLA, is compound, and radiated; conſiſting of many tubular, hermaphrodite florets in the diſc, and ſpear-ſhaped, flat, barren florets in the radius.—STAMINA, five very ſhort hair-like filaments, having cylindric antheræ.—PISTILLUM, a tetragonous germen, filiforme ſtyle, and bipartite revolute ſtigma.—PERICARPIUM, none; the hermaphrodite florets, ſucceed each to one oblong ſeed, crowned with down, which is quadridented, and the ſeeds lodged in a conic chaffy receptacle.

There are ſix ſpecies, five of them herbaceous perennials, and the ſixth a biennial, all natives of North America; but grow freely here in our gardens, in any open compartments.

*Perennial Kinds.*

[1]RUDBECKIA *Hirta.*

*Hairy Dwarf American Sunflower.*] Riſes with upright ſtalks, a foot and half high; oval-ſpattle-ſhaped, undivided, triple-nervous leaves; and the ſtems dividing upward into many long pedunculi, terminated each by one large radiated yellow flower, having a prominent purple diſc, and the petals of the radius emarginated.

[2]RUDBECKIA *Purpurea.*

*Purple Dwarf Carolina Sunflower.*] Riſes with upirght ſtalks about two feet high; oval-lanceolate, undivided, alternate leaves; and the ſtalks and branches terminated by purple flowers, ſingly; having the petals of the radius bifid.

*Varieties.*] With a dark-purple diſc, and pale red radius—with long purple petals in the radius—with broad petals in the radius.

[3]RUDBECKIA *Laciniata.*

*Laciniated, or jagged-leaved Tall Virginian Rudbeckia.*] Riſes with upright ſtems, ſix or eight feet high; large, compound, moſtly, five-lobed leaves, having the lobes deeply laciniated, or jagged; and the ſtems and branches terminated by radiated yellow flowers.

*Varieties.*] Broad-leaved—narrow leaved—purple ſtalked, with digitated leaves, &c.

[4]RUDBECKIA *Anguſtifolia.*

*Narrow-leaved Dwarf Virginia Sunflower.*] Riſes with upright firm ſtems, two or three feet high, or more; long, linear, or very narrow, entire, oppoſite leaves; and the ſtalks terminated by yellow-rayed flowers, having a dark-red diſc.

[5]RUDBECKIA *Oppoſitifolia.*

*Oppoſite-leaved Dwarf Virginia Sunflower.*] Riſes with upright ſtalks two or three feet high; lanceolate-oval, ſerrated, oppoſite leaves, and wholly yellow flowers, having the petals of the radius bifid.

*Biennial Kind.*

[6]RUBBECKIA *Triloba.*

*Three-lobed Virginia Rudbeckia.*] Hath ſpatula ſhaped, trilobated, radical leaves; amidſt them upright ſtems, garniſhed alſo with three-lobed leaves; but thoſe on the branches are undivided; and yellow-rayed flowers, having dark-purple diſcs.

All theſe ſix ſpecies flower here annually in July and Auguſt, often continuing in ſucceſſion till September or October; and in ſome ſorts, are ſometimes ſucceeded by ripe ſeeds in autumn, particularly the firſt and laſt ſpecies.

They are all tolerably hardy: the firſt five ſpecies are moſtly perennial in root, but annual in ſtalk; though the fourth and fifth ſorts have often a tendency to a biennial nature; however, the ſixth ſort is perfectly biennial; all of which ſend up their flower-ſtems in the ſpring, which generally branch out upward, the branches terminated by long pedunculi, each crowned by one moderately-large radiated flower, nearly reſembling the common ſunflower, but ſmaller; have generally a prominent, ſomewhat pyramidal diſc, and a ſpreading radius; and are all very conſpicuous, even at a diſtance.

All the ſpecies are proper furniture for the open compartments of the pleaſure-ground, as being very ſhewy plants when in bloom; and produce many flowers in ſucceſſion, two or

three months; effecting a good ornamental appearance.

Obſerve to allow moſt of the ſorts a lightiſh, dry ſoil, and ſomewhat ſheltered ſituation; remarking however, the third ſort in particular *(Rudbeckia laciniata)* will ſucceed almoſt any where.

*Method of Propagation, &c.*

Their propagation is by off-ſets, and parting the roots; and by ſeeds.

By off-ſets, and parting the roots.——This is practicable for all the perennial kinds; but the firſt ſort in particular generally reſolves itſelf into ſeveral off-ſet heads, at the crown of the root, which being ſlipped in autumn, or early in ſpring, each will form a proper plant. Moſt of the other perennial ſorts encreaſe by the root, though the *Rubeckia Purpurea* multiply rather more ſparingly than the others; however, the propagation of all the ſorts may be effected leſs or more by parting the roots in autumn, when the ſtalks decay.

Obſerve, as ſome of the perennial kinds ſometimes diſcover a tendency to go off in three or four years, it is eligible to continue propagating them frequently to keep up a ſtock of vigorous plants. Some ſorts being alſo ſometimes inclinable to a biennial nature, are apt to decay ſoon after they have flowered, without encreaſing at root, for future propagation, particularly the fourth and fifth ſorts; to prevent which, it is proper to cut down ſome of the flower-ſtems of ſuch kinds in May, or early in June, which will encourage their multiplying more effectually by root off-ſets, fit for ſlipping next autumn.

By Seed.—All the ſorts may be raiſed plentifully from ſeed; but the biennial ſorts in particular muſt always be raiſed from ſeed annually; likewiſe, ſuch of perennials as are biennially inclined; ſowing the ſeeds in April, in a border of light earth, and rake them in; and when the plants are two or three inches high, prick them out in nurſery-rows, till autumn; then tranſplanted where they are finally to remain.

RUMEX, Dock; comprehending the *Acetoſa*, or Sorrel, &c.

This genus furniſhes herbaceous perennials for the kitchen-garden, and pleaſure-ground, and a ligneous ever-green for the green-houſe; are garniſhed with ſimple, oblong, ſaggitated, and roundiſh, heart-ſhaped leaves; and ſpikes of ſmall tripetalous flowers of no beauty.

Claſs and order, *Hexandria Trigynia.*

*Characters.*] CALIX, three obtuſe, reflexed, permanent leaves.—COROLLA, three ſmall oval, connivent, permanent petals, like the leaves of the calix, but larger.—STAMINA, ſix very ſhort capillary filaments, having erect didymous antheræ.—PISTILLUM, a turbinated triquetrous germen, three hair-like reflexed ſtyles, and large laciniated ſtigmas.——PERICARPIUM, none; a ſingle triquetrous ſeed, lodged in the permanent corolla.

To this genus, *Rumex*, is added the *Acetoſa*, or Sorrel, formerly conſidered as a diſtinct genus; conſiſting of ſeveral ſpecies, but now all ranged as ſpecies of *Rumex*, which comprehends in the whole about twenty-ſix herbaceous, and one woody ſpecies; eight or ten of the former grow wild in this country, and the others are of foreign growth; but there are not more than four or five that have merit for garden culture; conſiſting of four hardy herbaceous perennials, and one tender woody plant.

*Hardy Herbaceous Kinds.*

Under this head is compriſed the common culinary Sorrels for the kitchen-garden; the Patience Dock, &c. and Bloody Dock, for medical purpoſes, and variety; all of which are hardy perennials.

The two firſt ſorts are of the Sorrel kind.

[1]RUMEX *Acetoſa.*

*Acetoſa, or common Arrow-pointed Meadow Sorrel.*] Hath fibrated roots, crowned by a large tuft of oblong-ſaggittated leaves; and amongſt them upright ſtems a foot or more high, terminated by ſpikes of ſmall herbaceous dioecious flowers, ſucceeded by ripe ſeeds in autumn.

*Varieties.*] Common Meadow-ſorrel.——Barren Northern Sorrel, which rarely running to ſeed continues almoſt always in leaf for uſe—broad-leaved Mountain Sorrel.

The Common Sorrel is a natural reſident of our meadows and paſtures; but has been long admitted an inhabitant of the gardens as a ſoup-herb; and is the moſt commonly cultivated Sorrel for general uſe, both as a valuable acid culinary herb, and for medicinal purpoſes; its leaves being the uſeful part, which by garden culture obtain a fine large ſize.

The plants are eaſily raiſed from ſeed, and by parting the roots. See their *Propagation*, &c.

[2]RUMEX *Scutatus.*

*Shield-ſhaped Rumex, Round-leaved, or French Sorrel.*] Hath a creeping root crowned with

with a tuft of large roundiſh, heart-ſhaped, haſtated leaves; rambling ſhoots, and the flower ſtems terminated by ſpikes of ſmall hermaphrodite flowers, ſucceeded by ſeeds in autumn.

This ſpecies of Sorrel is by many preferred to the common *Acetoſa*, or Meadow Sorrel; the leaves being larger, and thought to poſſeſs a more agreeable acid reliſh.

The above two ſpecies of Sorrel and varieties are all of the culinary kind; any, or all of which may be raiſed for general uſe; and may all, but the Barren Sorrel, be propagated by ſeed: all the ſorts alſo by parting the roots, planting them in any bed or border, ten or twelve inches aſunder, and they will furniſh leaves moſt part of the year.

[3]RUMEX *Patientia.*

*Patientia, or Patience Dock, or Monks Rhubarb.*] Hath a large, thick, divided, deeply-ſtriking root, yellow within, crowned with large, oblong, heart-ſhaped leaves, a foot long, on very thick reddiſh foot-ſtalks; upright ſtrong ſtems, dividing and branching three or four feet high; having the branches terminated by cloſe erect ſpikes of whitiſh hermaphrodite flowers, and with entire valves, one being graniferous.

*Variety* ] Round-leaved Alpine Patience Dock; commonly called Monks Rhubarb.

This ſpecies and variety are natives of Italy and the Alps; are retained in our gardens both as medical plants, and to effect variety, alſo formerly for culinary uſes; they ſhoot up into ſtalks annually in the ſpring, flower in May, and ripen ſeeds in autumn.

[4]RUMEX *Sanguineus.*

*Bloody Dock.*] Hath long downright roots, erect red-ſtalks, two or three feet high; heart-formed lanceolate leaves, having blood-red veins, and many red ſpots; the ſtalks terminated by ſpikes of hermaphrodite flowers, and with entire valves, one being graniferous.

This is retained in many gardens for the ſake of variety.

*Woody Kind for the Green houſe.*

[5]RUMEX *Lunaria.*

*Tree-like Rumex, commonly called Tree Sorrel.*] Riſes with a woody, tree-like, ſmooth ſtem, branching eight or ten feet high; garniſhed with roundiſh heart-ſhaped leaves; the branches terminated by looſe panicles of greeniſh hermaphrodite flowers, and with ſmooth valves.

This is an exotic from the Canary Iſlands, and is retained in our gardens to encreaſe the variety in the green-houſe collection.

The above five ſpecies are principally all the ſorts of *Rumex*, commonly cultivated in the Engliſh gardens; the four herbaceous kinds are perennial in root, and annual in ſtalks, and hardy enough to ſucceed in any open ſituation; and the woody kind is durable both in root and ſtem, &c. and is tender, requiring ſhelter of a green-houſe, in winter. They flower generally in June or July; the flowers are ſmall and tripetalous, generally terminating the ſtalks and branches in ſpikes, but are not ornamental; and are ſucceeded by ripe ſeeds in autumn.

Their merit as garden plants is, all the herbaceous Sorrel kinds, are eminent ſoup herbs for culture in the kitchen-garden, as aforeſaid: the *Rumex Patientia*, as a medical plant; alſo, together with the *Rumex Sanguineus*, is often employed for variety in the pleaſure-ground; and the *Tree Sorrel* being tender, muſt be potted and placed among the green-houſe exotics.

*Propagation and Culture.*

Moſt of the herbaceous culinary Sorrels are raiſed from ſeed, and by parting the roots.

By Seed.—The common Sorrel, and round-leaved kind may be raiſed abundantly by ſeed in the ſpring; but the common Sorrel in particular ſhould be generally raiſed by this method, as the other propagates exceedingly by its repent roots, &c. However, both ſorts may be ſowed in March, in any bed or border, broad caſt, and rake them in evenly, they will ſoon come up; obſerving, if the plants riſe too thick, thin them moderately; and after being a little advanced in growth in ſummer, plant out a quantity of the ſtouteſt in moiſt weather, in ſome bed or border in rows, the common ſort and varieties about eight or nine inches aſunder, and the other a foot at leaſt, giving proper waterings, and they will grow freely, and be fit to cut for uſe the ſame ſummer and autumn, &c. and continue ſeveral years.

Obſerve however, of the common Sorrel in particular, that as ſeedling plants of one or two years old, generally produce larger leaves than older plants, it may be eligible to raiſe a freſh ſupply of ſeedlings annually, or at leaſt every other year.

By parting the Roots.——All the ſorts may be propagated by this method, but the Round-leaved French Sorrel in particular increaſes exceedingly by running at the root; and the

Barren

Barren Sorrel, rarely producing ſeed, is propagated principally only by parting the roots. However, any of the ſorts may be eaſily increaſed by this method, which may be effected either in autumn or ſpring, though I ſhould rather preſer the ſpring ſeaſon, about the beginning or middle of March; either ſlipping off a quantity of off ſets from the old plants as they ſtand, by aſſiſtance of a knife or ſpade; or take ſome of them wholly up, and divide them into ſeveral ſlips, planting them in rows a foot diſtance, and give directly a good watering, they will expeditiouſly take root, aſſume a free growth, and furniſh plenty of leaves for uſe all ſummer and autumn, &c.

As to the culture of theſe plants, very little is required more than the neceſſary care of keeping them clean from weeds; and in ſummer, when they run to ſtalk, it is proper to cut them down cloſe to encourage a more plentiful ſupply of large leaves from the bottom; likewiſe, when the leaves have become very rank, cut them down occaſionally towards the latter part of ſummer, that the roots may ſend up a good ſupply of freſh leaves for autumn, and winter ſervice.

The *Patientia* and Bloody Dock, are alſo raiſed by ſeed, and the former likewiſe by roots.

By Seed.—In autumn, or early in ſpring, ſow the ſeed in a bed of light earth, and rake it in; and when the plants are come up three inches high, thin out a quantity, and plant them either in nurſery-rows a foot diſtance, or at once where they are to remain.

By Roots.—The Patience Dock, and variety, encreaſe by off-ſets from the root, which being ſlipped in autumn, and the ſlips directly planted, they will readily grow.

And the *Rumex Lunaria*, or *Tree Sorrel*, is propagated eaſily by cuttings of the young ſhoots in ſpring and ſummer; if performed in ſpring, plant them in pots, and plunge them in a hot-bed, they will very ſoon emit roots; but in ſummer, they will ſucceed without aid of artificial heat, planted either in pots, or in a border of common earth, and occaſionally ſhaded and watered, many of them will ſtrike and be well rooted by autumn.

RUSCUS, Butchers Broom, and Alexandrian Laurel.

Conſiſts of low ſhrubby, and under-ſhrubby ever-greens, for the ſhrubbery and greenhouſe collection; riſing ſome three or four feet high, others ſcarcely a foot; garniſhed with ſmalliſh, oblong, and lanceolate leaves, ſome prickly, others ſmooth, from one to three inches long, and from half an inch to an inch broad, remaining all the year; and dioecious apetalous flowers, produced in moſt ſorts, on the ſurface, and margin of the leaves, and in ſome at the ends of the branches.

Claſs and order, *Dioecia Syngeneſia*.

*Characters.*] CALIX, Dioecious flowers, having ſpreading cups compoſed of ſix oval convex leaves.—COROLLA, no petals, but an oval erect nectarium, the ſize of the calix, open at the mouth.—STAMINA, no filaments, but three ſpreading antheræ, ſitting on the nectarium, and join at the baſe.—PISTILLUM, an oblong-oval germen, hid within the nectarium, a cylindric ſtyle, crowned by an obtuſe ſtigma, ſtanding above the mouth of the nectarium.—PERICARPIUM, a round, or globular trilocular berry, having two round ſeeds.

This genus conſiſts of five ſpecies, three or four of which are hardy for any open plantations; and the others tender, requiring ſhelter of a green-houſe in winter.

*Hardy Kinds.*

Under this head is compriſed the common Butchers Broom—*Hypogloſſum*, or Tongued Laurel—and Alexandrian Laurel; all of which are ſhrubby ever-greens of hardy growth.

1 RUSCUS *Aculeatus.*

*Prickly Ruſcus, Common Butchers Broom, or Knee-Holly.*] Hath a thick, fibrated, creeping, deeply-ſtriking, white root; ſeveral erect, ſhrubby, tough, green ſtems, two or three feet high, cloſely garniſhed with ſmall, oval, ſtiff, dark-green leaves, alternately, terminating in prickly points; and ſmall, purpliſh flowers, ſituated on the upper ſurface of the leaves, ſucceeded in the female plants, by large red berries, ripening in winter.

This ſpecies grows abundantly in England, &c. in woods, and is introduced in many gardens, in wilderneſs, and ſhrubbery plantations for variety.

Great quantities of the young buſhy plants of this ſpecies are brought to London in winter for ſale; they being collected in the neighbouring woods, by the herb people, taking them up with a little ball of earth about the roots, wrapping the ball up with moſs, and in that manner hawk them about the ſtreets; and the citizens buy them to plant in pots of ſand, to adorn rooms, where they will remain green a long time. It is alſo in much requeſt among

among the butchers, for ſcrubbing brooms; the branches being tied in bundles, forming a ſort of broom, or beſom; and with which they ſcrub their chopping-blocks. Hence the name Butchers Broom.

[2]Ruscus *Hypophyllum.*

*Hypophyllum, or Broad-leaved Italian Butchers Broom.*] Hath thick, knotty, long-fibrated roots; many ligneous, pliable, tough, green ſtems, two or three feet high; oblong, oval, ſtiff, ſhining-green leaves, placed alternately, and bearing flowers on their under ſurface; ſucceeded, in the female plants, by ſmall red berries, ripening in winter.

[3]Ruscus *Hypogloſſum.*

*Hypogloſſum, or Tongued Ruſcus, commonly called Tongue upon Tongue Laurel.*] Hath thick fibrey roots; many ligneous, ſlender, pliable, green ſtems, ten or twelve inches high; long ſpear-ſhaped leaves, each having a ſmaller leaf, like a tongue, iſſuing from its upper ſurface, and from the bottom of which are produced ſmall yellowiſh flowers, ſucceeded by large red berries, ripening in winter.

It is a native of mountainous parts of Hungary and Italy.

[4]Ruscus *Racemoſus.*

*Racemoſe flowered Ruſcus, or Alexandrian Bay, commonly called Alexandrian Laurel.*] Hath thick, long, fibrey, whitiſh roots; many ſhrubby, ſmooth, very pliable, ſhining-green ſtems, four or five feet high, producing branches alternate-ways; garniſhed with oblong-lanceolate, ſhining-green leaves; and yellowiſh hermaphrodite flowers, terminating the branches in racemous cluſters, ſucceeded by large red berries, ripening in winter.

This ſpecies having the name of Bay, and Laurel, and being of a fine pliant growth, is ſuppoſed to be the plant uſed by the ancients for compoſing wreaths to crown their victors, and eminent poets.

*Variety.*] With red-flowers.

The above four hardy ſpecies grow freely in any of the ſhrubbery plantations; and multiply exceedingly by off-ſet ſuckers from the bottom.

*Tender Kind for the Green-houſe.*

[5]Ruscus *Androgynus.*

*Androgynous Canary Ruſcus.*] Riſes with ſhrubby, pliant ſtems, five or ſix feet high, producing many ſide branches; garniſhed with oblong, ſtiff leaves; bearing ſmall white flowers on their edges, ſucceeded by reddiſh berries.

All the above five ſpecies of *Ruſcus* flower abundantly in June and July; four of which producing their flowers wholly upon the leaves, exhibit a curious ſingularity; and the *Ruſcus Androgynus* in particular, which having its flowers cloſely ſet all along the edges of the leaves, effect a ſingular and beautiful appearance; and the hardy ſorts are often ſucceeded by ripe fruit in our gardens in winter.

All the hardy ſorts are proper furniture for the verges of ſhrubberies, or any cloſe plantations, as they thrive under the drip of trees, and will remain green the year round, and increaſe the variety of thoſe compartments.

The tender ſort requires ſhelter of a green-houſe in winter, ſo muſt be planted in pots and managed as other ſhrubby exotics of that department.

The propagation of all the ſorts is very eaſy, as they increaſe very faſt by the roots, which ſending up numerous ſtalks or ſuckers, they may be taken up in autumn, winter, or ſpring, in open weather, and divided into many ſeparate ſets, each forming a proper plant; though they need not be divided too ſmall, unleſs where a great increaſe is required, planting the largeſt at once where they are to remain, and the ſmalleſt in nurſery-rows, &c. each plant will ſoon encreaſe by off-ſets, and aſſume a buſhy growth.

They may alſo be raiſed from ſeeds, though not expeditiouſly, for the ſeed often remains in the ground till the ſecond ſpring; ſow that of the hardy ſorts in any bed or border an inch deep; and the tender kind in pots, and placed under ſhelter, in cold weather; and when the plants are a year old, it is proper in March to prick them out, the hardy ſorts in nurſery-beds, for two or three years; and the tender ſort in pots.

RUTA, Rue.

It conſiſts principally of under-ſhrubby plants for the kitchen-garden and pleaſure-ground; adorned with many-lobed leaves, and ſmall tetrapetalous flowers, growing in bunches.

Claſs and order, *Decandria Monogynia.*

*Characters.*] Calix, is ſhort, five-parted, and permanent.——Corolla, four-oval, ſpreading petals.—Stamina, ten awl-ſhaped patent filaments, having ſhort erect antheræ.—Pistillum, a gibbous, croſs-furrowed germen, having ten punctures, an erect ſtyle, and ſimple ſtigma.—Pericarpium, a gibbous, five-lobed, quinquelocular, capſule, opening

opening in five parts at top, having many reniforme, angular, rough ſeeds.

There are three ſpecies, one of which only a ſhrubby, perennial; is common to the Engliſh gardens, comprehending ſome varities, valued chiefly as medical plants, and ſometimes to diverſify the ſhrubbery.

The ſpecies is,

RUTA *Graveolens.*

*Graveolent Ruta, or common Garden Rue.*] Riſes with a ſhrubby, very branchy ſtem, four or five feet high, forming a buſhy head; cloſely garniſhed with decompound, many-lobed, ſtrong-ſcented grey leaves; and the branches terminated by bunches of yellow flowers, having torn petals, and the lateral flowers quadrifid, ſucceeded by ripe ſeeds in autumn.

*Varieties.*] Common broad-leaved garden Rue—narrow-leaved Rue—broadeſt-leaved Aleppo Rue—narrow-leaved Aleppo Rue—variagated-leaved Rue.

They all flower in June, and ripen plenty of ſeed in autumn, particularly the common ſorts.

All theſe varieties of this ſpecies are hardy enough to ſucceed in the open ground, tho' the two Aleppo Rues ſhould have a ſheltered ſituation, and dry ſoil; and it is adviſeable to pot ſome of thoſe two ſorts to move, to ſhelter of a frame, or green houſe, in winter; the variagated kind ſhould likewiſe have a dry, poor ſoil, otherwiſe is apt to become vigorous, and loſe its variegations.

As to their uſes in gardening: the common broad and narrow-leaved Rues, are eſteemed principally as medicinal plants, and as ſuch merit culture in every garden, allowing them generally a dry ſoil, and may be raiſed both by ſeed, and by ſlips or cuttings; and afterwards planted out either ſingly about the borders; or where large quantities are wanted, in rows two feet aſunder, and a foot and half in the lines; but about London, where great quantities are raiſed for market, they commonly plant them in four-feet wide beds, in rows a foot aſunder; which, after having one or two years growth, and formed into little buſhy plants, are taken up in ſpring and ſummer, with balls, and carried to the markets for ſale; they likewiſe pot many of them, both of the plain green and variegated kind, which are alſo ready ſale in market, to place, to adorn court-yards, balconies, &c.—But all the varieties may alſo be employed in the ſhrubbery compartments, in a dry ſituation, where they will effect an agreeable diverſity, both in foliage and flowers.

The propagation of all the varieties is by ſeed, and by ſlips and cuttings.

By Seed.——The common Rue in particular may be raiſed plentifully by ſeed in the open ground; ſowed in March or April, on a bed of light earth, and rake it in; they will ſoon come up, which, when two or three inches high, ſhould be planted out in nurſery-rows, and watered till freſh rooted.

From the ſcattered or ſelf-ſowed ſeeds of the common Rue, many young plants often riſe in autumn and ſpring.

By Slips or Cuttings.——This is the moſt expeditious method of propagation for all the ſorts, for every ſlip or cutting of the branches will readily grow; and is the only method of propagation, by which we can continue the different varieties diſtinct; therefore in ſpring, any time in March or April, ſlip or cut off a quantity of the young ſhoots, ſix or eight inches long, and plant them in a ſhady border, in rows half a foot aſunder, giving a good watering, and repeat it occaſionally, they will ſoon emit roots below, and ſhoots at top, ſo as to form little buſhy plants by autumn.

# S.



SACCHARUM, Sugar-cane, or Sacchariferous Reed.

The plants of this genus are tall-growing tender perennials, of the arundinaceous tribe, natives of the Indies, and retained here in our ſtoves for variety; one of which is a moſt valuable plant, as from the juice of its ſtalks is prepared the various ſorts of ſugar; they riſing with erect ſtrong ſtems, eight or ten feet high, adorned with very long leaves, and terminated by large panicles, and ſpikes of numerous bivalvous flowers.

Claſs and order, *Triandria Digynia.*

*Characters.*] CALIX, none, but a woolly-down incloſes each flower.——COROLLA, is bivalve; having too oblong-lanceolate, acuminate, concave valves.— STAMINA, three capillary filaments, as long as the valves, and oblongiſh antheræ.—PISTILLUM, a ſubulate germen, two cirrhoſe ſtyles, and ſimple ſtigmas.——PERICARPIUM, none, one narrow ſharp-pointed ſeed to each floret, inveſted by the valves.

The ſpecies are,

¹SACCHARUM *Officinarum.*

*Common Sugar Cane.*] Hath a long thick-jointed, fibrated, ſucculent root; ſending up ſeveral upright, round, jointed ſtems, from ſix or eight to ten feet high, or more, abounding with a pithy ſaccharine juice; having at each joint large oblong leaves, three or four feet long, the baſe embracing the ſtalk a conſiderable way up; and the ſtalks terminated by very large panicles of numerous ſmall flowers.

This ſpecies is the true Sacchariferous Cane, from which the ſugary juice is expreſſed, which being boiled and refined, becomes that well known uſeful ſubſtance called Sugar.

²SACCHARUM *Spicata.*

*Spiked Sugar Cane.*] Hath a thick-jointed fibrated root; upright jointed ſtems, ſix or eight feet high; oblong, waved leaves, two or three feet long; and the ſtalks terminated by ſpikes of purpliſh flowers.

Both theſe ſpecies are perennial in root; the ſtalks riſe ſeveral from each root; and in their growth reſemble the *arundo*, or common reed of the marſhes, but conſiderably larger, and inſtead of being hollow like thoſe plants, are filled with a whitiſh pith, containing the ſweet juice, or liquid, which renders theſe plants ſo very valuable; the ſtems are ſtrong, but brittle, generally growing to perfection in, from ſix or eight to twelve or fourteen months, becoming of a pale-yellowiſh colour; producing at top numerous ſmall flowers, collected into very large panicles, &c. ſometimes two or three feet long, each flower having only two ſmall valves for the corolla, and is wrapped up in long down; ſucceeded by oblong, narrow ſeeds included in the valves.

But it is the firſt ſort, *Saccharum Officinarum*, that is cultivated for ſugar, and for which purpoſe prodigious quantities are raiſed in the Weſt-Indies, and other hot countries; being propagated by ſuckers and cuttings, planting them in fields, in rows four or five feet aſunder, which ſoon ſhoot up into ſtalks, becoming fit to cut for uſe ſometimes in ſix or eight months, being then taken to a mill and ſqueezed between iron-caſed rollers, to expreſs the juice, which is then properly boiled and refined to form it into a due conſiſtence to become Sugar.

From the ſkimmings of the Sugar in the different boilings, and melaſſes, being the laſt drainings of the Sugar, mixing therewith a quantity of water, and the whole fermented, is extracted that ſpirituous liquor called rum, abounding with a ſalutiferous oilineſs, whence proceeds the excellence of that ſpirit, compared with brandy.

In this country however, this valuable plant cannot be cultivated without the aid of a hot-houſe all the year; ſo that only a few are raiſed by way of curioſity, being planted in pots of rich earth, and placed in the ſtove.

*Method of Propagation, &c.*

Their propagation is effected abundantly by ſlips or ſuckers from the root, and by cuttings of the main ſtalks.

In this country however, they are more generally propagated by ſlips from the bottom, or any ſide-ſhoots ariſing from the ſtems near the root, having earth raiſed about the bottom part, will ſoon emit fibres, and be fit for ſeparation; obſerving, theſe ſlips or off-ſets may be taken off at any ſeaſon, in which they appear fit for the purpoſe, being careful to detach them with ſome fibres to each, and plant them ſeparately in pots of rich earth, and plunged in the bark-bed, watered, and occaſionally ſhaded till they have got root; retaining them always in the bark-bed in the ſtove; and managed as other exotics of that repoſitory.

But in the Weſt-Indies, &c. theſe plants are moſt commonly propagated by cuttings of the tops of the old canes, or any part thereof, divided into lengths of from twelve to eighteen inches long, and placed horizontally in the ground three or four inches deep.

SALIX, Sallow, or Willow-tree.

The Sallow and Willow are principally of the tree kind of the deciduous tribe; valuable both as timber trees for various light uſes, and for all ſorts of baſket-work, poles, &c. Some ſorts alſo to diverſify garden plantations, there being many ſpecies growing from twenty to thirty or forty feet high, or more, garniſhed with oval, ſpear-ſhaped, and oblong leaves, in different trees, and dioecious apetalous flowers, diſpoſed in amentums.

Claſs and order, *Dioecia Diandria.*

*Characters.*] CALIX, male and female flowers on ſeparate plants, diſpoſed in oblong, ſcaly, imbricated, katkins, or amentums, each ſcale containing one floret.—COROLLA, no petals, but cylindric nectarious glands in the centre.—STAMINA, in the males, generally two filaments, crowned with didymous quadrilocular antheræ.—PISTILLUM, in the females, an oval narrow germen, a ſcarcely diſtinguiſhable ſtyle, having two erect bifid ſtigmas.—PERICARPIUM, an oval-ſubulate, unilocular, bivalved capſule, having many ſmall ſeeds crowned with down.

There are about thirty different ſpecies of this genus, moſtly of the tree kind, of hardy growth, and ſome low under-ſhrubby, and herbaceous-like plants of no uſe; ſo that the tree kinds only merit conſideration for general culture, ſeveral of which grow to timber-trees; others are of great value to the baſket-makers, being planted in marſhy grounds, kept to low ſtools to produce a crop of ſhoots, or twigs to cut annually, for all kinds of wicker-work; and others being ſuffered to grow larger, to cut every three, or five, or ſix years for poles, uſeful for various purpoſes: and for garden culture, ſome particular ſorts may be introduced thinly in large plantations for variety; and ſome ſorts of the oſier kinds ſhould be planted in ſome moiſt place, to furniſh twigs for tying various garden articles.

The principal tree kinds in England are,

[1]SALIX *Caprea.*

*Common Sallow Tree.*] Grows to but a moderate height, having ſmooth, dark-green, brittle branches; oval, waved, rough leaves, indented at top, and woolly underneath.

*Varieties.*] Oblong, acute-pointed-leaved—ſilver-ſtriped leaved.

It grows abundantly in this country, but more frequently in dry than moiſt ſituations; is of a brittle nature, ſo is unfit for the baſket-makers; but will ſerve for poles, ſtakes, and to lop for fire-wood, and its timber is good for many purpoſes.

[2]SALIX *Alba.*

*White, or Silver-leaved Willow.*] Grows to a great height, and conſiderable bulk, having ſmooth pale green ſhoots; long, ſpear-ſhaped, acuminated, ſawed, ſilvery-white leaves, being downy on both ſides, with glands below the ſerratures.

This is the common White Willow, which grows abundantly about towns and villages, and by the ſides of rivers and brooks, &c.

[3]SALIX *Vitellina.*

*Yellow, or Golden Willow.*] Grows but to a moderate height, having yellow, very pliant, ſhoots; oval, acute, ſerrated, very ſmooth leaves, with the ſerratures cartilaginous, and with callous punctures on the foot-ſtalks.

[4]SALIX *Purpurea.*

*Purple, or Red Willow.*] Grows to a large height, having long, reddiſh, very pliable ſhoots, and long ſpear-ſhaped, ſerrated, ſmooth leaves, the lower ones being oppoſite.

[5]SALIX *Viminalis.*

*Viminalous or Oſier Willow.*] Grows but a moderate height, having ſlender, rod-like branches, very long, pliant, greeniſh ſhoots; and very long, narrow, ſpear-ſhaped, acute, almoſt entire leaves, hoary, and ſilky underneath.

[6]SALIX *Amygdalina.*

*Almond-leaved Willow.*] Grows to a middling height, with long, flexible, light-green branches and ſhoots; ſpear-ſhaped, ſerrated, ſmooth, ſhining-green leaves, on ſhort foot-ſtalks, having trapeza-ſhaped ſtipula.

[7]SALIX *Pentandria.*

*Pentandrous, Broad-leaved, Sweet-ſcented Willow.*] Grows to ſome conſiderable ſtature, having browniſh-green branches; oblong, broad, ſerrated, ſmooth, ſweet-ſcented leaves, ſhining above; and pentandrous flowers.

[8]SALIX *Triandria.*

*Triandrous Willow.*] Grows to a large ſtature, having numerous, erect, greyiſh-green branches, and pliant ſhoots; oblong, acute-pointed, ſerrated, ſmooth, ſhining-green leaves, eared at the baſe; and triandrous flowers.

[9]SALIX *Fragilis.*

*Fragile or Crack Willow.*] Riſes to a middling ſtature, with browniſh, very fragile, or brittle branches, long, oval-lanceolate, ſawed, ſmooth leaves of a ſhining-green on both ſides, having dentated-glandular foot-ſtalks.

This ſort in particular being exceedingly fragile, ſo that it eaſily cracks and breaks, is unfit for culture in oſier grounds.

[10]SALIX *Haſtata.*

*Haſtated-leaved Willow.*] Grows to a middling ſize, with long, green, pliable ſhoots; ſub-oval, acute, ſerrated, ſmooth, cloſe-ſitting leaves, having heart-ſhaped ſtipula.

[11]SALIX *Helix.*

*Helice of Theophraſtus, or Dwarf Yellow Willow.*] Grows but to a very moderate ſtature, having a yellow, rough-barked trunk, with browniſh branches; and narrow, lanceolate, ſerrated, ſmooth, blueiſh-green leaves, the upper ones obliquely oppoſite.

[12]SALIX *Babylonica.*

*Babylonian pendulous Salix, commonly called Weeping Willow.*] Grows to a largiſh ſize, having numerous, long, ſlender, pendulous branches, hanging down looſely all around in a curious manner, and long, narrow, ſpear-ſhaped, ſerrated, ſmooth leaves.

This curious Willow is a native of the Eaſt, and is retained in our hardy plantations for ornament, and exhibits a moſt agreeable variety; particularly when diſpoſed ſingly by the verges of any piece of water, or in ſpacious openings of graſs ground.

*Other eminent Sorts diſtinguiſhed by the following Names:*——Sound-growing Norfolk Willow.——Upland red Willow.——Broad-leaved Flanders Willow—Swallow-tail Willow—Dutch Oſier—Wire Oſier, &c. with ſome other varieties, particularly of the Oſier kinds, found principally in the oſier-grounds for the baſket-makers, diſtinguiſhed by different names, in different places.

The mode of flowering of all the ſorts of Willows is, in amentums, or katkins from the ſides of the branches, being male and female in different katkins on ſeparate trees; ripening in March and April.

All the above ſpecies and varieties of *Salix* are of the tree kind, very hardy, and remarkably faſt growers, and ſeveral of them attain a conſiderable ſtature, when permitted to run up to ſtandards, which frequently grow forty or fifty feet high, in twenty or thirty years, having proportionably large trunks; though ſome ſorts are apt to decay on the ſides, when large, and others will remain ſound to a conſiderable age and bulk: but all the ſorts may be eaſily raiſed from cuttings, both as ſtanards for timber; or kept down to dwarf ſtocks, for producing rods and twigs; or formed into pollards, or half-ſtandards for loppings.

Moſt of the ſorts grow naturally in England, &c. in great abundance, except the Triandrous and Haſtated Willows, which grow chiefly in Switzerland; and the Weeping Willow is a native of the Eaſt; but are all hardy enough to grow any where.

They are moſtly of the aquatic tribe, as being generally the moſt abundant, and of moſt proſperous growth in watery ſituations; they however will grow freely almoſt any where, in any common ſoil and expoſure; but grow conſiderably the faſteſt and ſtrongeſt in low moiſt land, particularly in marſhy ſituations, by the verges of rivers, brooks, and other waters; likewiſe along the ſides of watery ditches, &c. which places often lying waſte, may be employed to good advantage, in plantations of willows, for different purpoſes.——Some for ſtandards to grow to timber; ſome to form Oſier beds, and kept down to ſtools, a foot high, to furniſh an annual cutting of rods or twigs, for the baſket-makers; which, being cut every year, pay well for the the ground and trouble. Other plantations to furniſh poles, for cutting every three, four, five, or ſix years, for various uſes: and ſome planted alſo for pollards, forming ſtems, eight or nine feet high; which, branching out numerouſly at top, furniſh a lopping every four, five, or ſix years, both for poles, and for faggot-wood to burn. For all

of which purpoſes, they may be raiſed expeditiouſly by cuttings of all ſorts, either of the young ſhoots, one or two feet long, or large truncheons or poles, of from three to eight or ten feet in length, planted particularly in moiſt places; for the cuttings of theſe trees are remarkably free of growth, ſo that ſometimes, when uſed for common hedge-ſtakes, they ſtrike root freely and grow up to large trees.

For ornamental purpoſes in gardening, may introduce any of the ſorts in any hardy plantations for variety, as aforeſaid; but more particularly the white Willow, yellow Willow, purple Willow, pentandrous ſweet Willow, almond-leaved, and weeping Willow, being diſpoſed thinly in large out-plantations, will effect an agreeable diverſity: but the Babylonian, or weeping Willow, for its curious pendulous growth, demands culture in every garden; and which, for the general part, ſhould be diſpoſed ſingly or detached, both by the ſides of water, and in ſpacious opens of graſs ground; alſo near grottos, caſcades, caves, ruins, &c. in all of which, it will effect a moſt agreeable variety, with its numerous, ſlender, pendulous branches, bending arch-ways all around, terminated by very numerous, long, ſlender, hanging ſhoots. Likewiſe plantations of all the ſorts of Willow in aſſemblage with poplars, birch, and other aquatic trees, may be formed in any low watery ſituation, where other trees will not thrive, and they will exhibit an eligible diverſity, as well as ornament the premiſes.

Likewiſe for garden-culture, ſhould introduce ſome of the beſt Oſier kinds, which are of great uſe for tying and binding particular articles; ſuch as for tying the branches of eſpalier trees to the treillage; likewiſe in the nurſeries for binding bundles of trees for ſending to a diſtance; and in the market-gardens for binding their ware in bunches for market, ſuch as celery, turneps, coleworts, leeks, horſe-radiſh, &c. as practiſed by the London gardeners; alſo for tying up the leaves of early cabbages, &c. to facilitate their cabbaging and whitening in the heart: they are likewiſe uſeful for making and mending garden baſkets occaſionally: therefore it is proper, for all of thoſe purpoſes, to plant a quantity of cuttings, of the beſt Oſier kinds, in ſome moiſt ſituation, near water if poſſible, keeping them low, and they will furniſh a crop of twigs annually; a quantity of which being cut in winter, and tyed in bundles, may be preſerved for uſe all the year, which, when become dry, they being thrown into water will ſupple them for uſe.

*Method of Propagation and Culture.*

All the ſorts of Willows are propagated expeditiouſly by cuttings both of the young ſhoots of one or two years old, in lengths of half a yard or two feet long; and thoſe of ſeveral years growth in truncheons or poles, of from three or four, to eight or ten feet long, according to the purpoſes for which they are deſigned, as mentioned below; all of which will moſt readily ſtrike root, eſpecially in low moiſt ſoils: and the ſeaſon for planting them, is any time in open weather, from October until February: having generally a long iron-ſhod dibble, for planting the ſmaller cuttings, and an iron crow for making holes for the larger ſets, or make holes with a ſpade for very large long cuttings; though ſome uſe no inſtrument in planting the ſmaller cuttings, but ſharpen the ends of them, and thruſt them into the ground, eſpecially in ſoft land; but as this method is apt to force off the bark from the lower part of the cutting, it is therefore beſt to cut the bottom of each cutting even, and plant them with ſome inſtrument as above.

They are planted for different purpoſes; as for timber trees—to form oſier grounds—to cut for poles—pollards for lopping, &c. So the cuttings muſt be prepared and planted according as directed below, under their reſpective heads.

*For timber trees.*——The timber of Willows is eſteemed for ſeveral purpoſes, it being very white, of a fine grain, ſmooth, and takes a good poliſh, which renders it proper for many light articles: and, to raiſe them for timber, chuſe the larger growing ſorts, ſuch as the white, yellow, and purple, or red willows, &c. taking cuttings of the ſtrong young ſhoots, which may be planted at once where they are to remain, in any low marſhy ſituation, where they will grow amazingly faſt.

Having however prepared the ground, by proper digging, or plowing, as may be moſt convenient, and the ſituation admits; then provide a quantity of cuttings of ſtrong young ſhoots, of one or two years growth, cut to half a yard, or two feet lengths, which plant in rows, only ſix feet aſunder, and three or four diſtant in the rows, that they may draw each

each other up faſt in growth, and allow for a gradual thinning, inſerting each cutting two parts of three into the ground, by the method before obſerved; they will ſoon emit roots, and ſhoot ſtrongly at top in ſpring and ſummer, obſerving to clear all away but one of the ſtrongeſt leading ſhoots for a ſtem, which ſuffer to run up always at full length in its future growth; remarking, that in a few years, when the trees approach one another, they ſhould be thinned, which thinnings will ſerve for poles for ſeveral uſes, repeating the work of thinning in a few years more, according as the branches of the different trees interfere, leaving them at laſt about twelve or fifteen feet aſunder, to attain full growth: thus they will draw each other up very expeditiouſly with ſtreight handſome ſtems, forty or fifty feet high or more; and in twenty or thirty years, will be fit to fell for timber.

*For Oſier Grounds.*——Oſier grounds are plantations of oſier Willows, in low ſtools for producing twigs annually for the baſket makers, being formed in any low watery ſituation, planted with cuttings of the beſt oſiers, and all the other moſt pliant ſort of Willows, in rows two or three feet aſunder, and always kept to low ſtools a foot high, in order to force out a more plentiful annual crop of twigs and rods, from three or four, to ſix or eight feet long, of a pliant tough nature, fit for working into all kinds of baſket and wicker-work, which being cut annually in winter for ſale, are worth from five or ſix, to eight or ten pounds an acre per annum: ſo that, oſier plantations being thus formed in any low watery waſte land, incapable of yielding other produce to perfection, will turn out to great advantage; and, if near any navagable river, for the convenience of water carriage, it will ſtill be more advantageous: on which conſideration, very large tracts of waſte, boggy grounds and iſlands, along the river of Thames, is employed in oſier grounds, for the London conſumption.

Therefore, making choice of any convenient, low, moiſt ſituation, let it be digged or ploughed, for the reception of the oſiers: then, in the proper ſeaſon before-mentioned, gather a ſufficient quantity of oſier ſets of different ſorts, which muſt be cuttings of the one or two years old ſhoots, cut into two feet and half lengths; theſe being provided, then draw lines for planting them, two feet and half diſtance, inſerting each cutting about a foot and half into the ground, leaving the reſt out to form the ſtool, and let them be two feet and half diſtance in each row: having thus formed the plantation, the cuttings will root firmly in the ſpring, and ſhoot at top tolerably ſtrong in ſummer, each ſtool generally throwing out ſeveral ſhoots, of an erect growth; obſerving, during this firſt ſummer, to keep down all large weeds, that the ſtools may have full ſcope to produce the firſt ſhoots as ſtrong as poſſible, which, by the end of autumn, will probably be advanced ſome conſiderable length; and if much wanted, may be cut in the following winter; though, for a full plantation, they ſhould generally be ſuffered to continue their growth for two or three years, till the ſtools are firmly rooted and become ſtrong; then cut down all the tops cloſe to the head of the ſtools; they will ſerve for poles, &c. next year the ſtools will ſhoot out ſtrong, a numerous crop of twigs and rods, fit for cutting for the baſket-makers in winter following; and, the ſtools ſtill remaining, furniſh an annual crop, fit for cutting every winter, which ſhould be cut always down to the head of the ſtool, as juſt above obſerved; ſorting the twigs in ſizes, tie them in bundles, and ſtack them up for uſe.

*To cut for Poles.*——Willow poles are uſeful for various huſbandry purpoſes; ſuch as for handles for implements, and for making hurdles, &c. and plantations of ſtools may be made in any waſte, watery places, as before obſerved, to cut every three, or four, or five, or ſix years, according to the purpoſes for which they may be required.

For this purpoſe, procure a quantity of ſets, of two year old ſhoots, in cuttings about two feet and half long; plant them in rows, a yard aſunder, introducing each cutting two parts of three into the ground; they will all readily grow, and each ſend out ſeveral erect ſhoots, which, in three or four years, will become large poles fit to cut for uſe.

Or large cuttings or truncheons, three or four feet long, thruſt down along the ſides of rivers, brooks, ditches, &c. they will take root, and ſhoot out ſtrongly at top for poles, as above.

*To form pollard Standards.*——Willow pollards are common almoſt every where, they being raiſed commonly from large ſets or cuttings of poles, three yards long, or more, planted along the ſides of rivulets or watery ditches, &c. and that being generally topped

or

or diveſted of the leading ſhoot, they do not run up with tall ſtems, but branch out all around, at ſeven or eight feet height, into many erect branches, which, in four, five, or ſix years, being lopped down to the head of the ſtem, ſerve for poles, for hurdles, &c. alſo for fuel, as before obſerved; and the pollards ſhooting out again, they in this manner furniſh a lopping every fifth, ſixth, or ſeventh year, and thereby prove very profitable for many purpoſes.

The ſets or cuttings for raiſing theſe pollards, may be obtained in plenty from the loppings of any old pollard Willows, &c. chuſing the large ſtraight poles, cut into nine or ten feet lengths, which muſt be planted either with an iron crow, or ſome ſimilar implement, driven into the ground, to make wide holes, two feet and half deep, for their reception; or, if the ground is impliant and ſtubborn, may dig holes with a ſpade that depth, planting one ſet in each hole, placing them two feet and half in the ground, leaving ſix or ſeven above for a ſtem: thus, theſe ſets, though ſo large and long, if planted in moiſt places, will readily ſtrike root, and ſhoot out at top the following ſpring and ſummer, into many erect branches, which, after four or five years growth, become fit to top for poles, &c. and the trees will thus continue to afford a lopping every fifth, ſixth, or ſeventh year; or may grow larger, according to the purpoſes for which the loppings may be wanted.

*To form Hedges.* —— Sometimes Willow hedges are raiſed in ſome outward place, along ditch ſides, or elſewhere, when deſigned to form either a fence, blind, or ſhelter expeditiouſly; which is eaſily effected by cuttings, either of ſtrong young ſhoots, cut into two or three feet lengths, and planted in a row half a foot aſunder, and fifteen or eighteen inches deep; or with larger truncheons of ſeveral years growth, cut into ſets, two, three, four, or five feet long or more; and in either caſe, that when the ſets have made the firſt years ſhoot, the ſhoots may be plaſhed together in winter, both to ſtiffen the hedge and give it a thicker form: afterwards it may be kept regular by clipping it annually, or may be ſuffered to take its own natural growth, as occaſion ſhall require.

Obſerve however, that to form a Willow hedge, as ſoon as poſſible, you may uſe large ſtreight ſets, of five or ſix feet long, and plant them chequer-ways, placing each ſet half a yard or two feet in the ground, leaving three or four feet above; which, being arranged croſs one another in the above mentioned chequer manner, and ranged all an equal height, they will at once form a good firm fence, immediately fencible againſt cattle.

Or, where a ſpeedy fence is wanted, by way of blind or ſhelter, may procure a quantity of loppings, five, ſix, or ſeven feet long, well furniſhed with branches to the bottom, which plant in a deepiſh trench, pretty cloſe together, they will grow and form a ſort of fence directly.

*To furniſh Twigs for Garden Uſe*—Oſier twigs being uſeful in many gardens for various tyings, as we before obſerved, it is eligible to cultivate a few of the beſt oſiers in moſt gardens, to ſurniſh a ſupply for the different purpoſes; chuſing ſome moiſt ſituation, or near any watery ditch, or other water in any bye place, or where moſt convenient: and, having procured a quantity of the moſt pliant kind of Oſier ſets, cuttings of young ſhoots, half a yard or two feet long, which plant in the place allotted in rows, planting or thruſting them two parts of three into the ground; they will grow freely, and furniſh plenty of twigs every year, managing them as obſerved for thoſe of the *Oſier Ground.*

As to the culture of all the above different plantations of Willows, they require but little; which is principally the keeping down large weeds the firſt and ſecond year after planting, which is more particularly requiſite in the plantations of young low cuttings, till they are a little advanced in growth.

*For Nurſery Collections.*—Collections of the different ſorts of Willows, ſhould alſo be kept in all nurſery grounds, both public nurſeries for ſale, and in private nurſeries, to ſupply plantations occaſionally, raiſing them generally from young cuttings, of a year or two old, in half yard or two feet lengths, and planted in rows, two or three feet aſunder, to grow till wanted.

## SALLAD HERBS.

Various ſorts of eſculent herbs of different genera, are uſed for ſallading, which by different ſowings, plantings, &c. are obtained at all times of the year; but the moſt generally eſteemed ſorts, may be compriſed under the following three heads. — *Principal Sallad Herbs.—Small Sallad Herbs.—Occaſional Sallad Herbs.*

*Principal*

*Principal Sallad Herbs.*—Theſe conſiſt chiefly of three ſorts, *viz.* lettuce, all the varieties —endive, all the different ſorts—and celery, all the varieties—which three principal ſorts are all raiſed from ſeed, by different ſowings and tranſplantings; and are in beſt perfection for uſe when arrived to full growth: either of which may be eaten as a Sallad alone, or all of theſe ſorts mixed together, or any, or all of them mixed with a proper quantity of ſmall ſallading, or other Sallad Herbs occaſionally: but with ſmall ſallading in particular is very eligible in winter and ſpring; as the ſmall ſallading, being of a warm nature, renders the Sallad more grateful and wholeſome. Lettuce is generally eſteemed as the moſt material Sallad Herb, for general uſe, at moſt times of the year, but particularly in ſummer, when full grown and firmly cabbaged; but by ſeveral ſowings and tranſplantations at different times, from January and February, until September or October, in different ſituations, according to the ſeaſon, the plants may be obtained in tolerable plenty almoſt the year round, but always more finely cabbaged in ſummer that in winter. And as to the endive and celery, they are excellent for autumn and winter Sallads, they being in full perfection in September, October, and November, when they will be full grown and finely blanched, and they often continue in tolerable perfection all winter and ſpring.—But for other particulars, together with the method of culture of theſe three principal Sallad Herbs. See their reſpective genera, LACTUCA, CICHORIUM, and APIUM.

*Small Sallad Herbs.*—The principal ſorts, denominated Small Sallad Herbs, are creſſes, muſtard, radiſh, rape, and turnip, alſo lap-cabbage-lettuce: all of which herbs, conſidered as ſmall ſallading, are always in perfection as ſuch when quite young, or only a few days old, whilſt in the ſeed leaf, cutting them up, ſhank and top together, cloſe to the ground, as when they are thus quite young they eat exceeding tender, with an agreeably warm reliſh, for they being moſtly of ſo warm a nature, that if ſuffered to grow old for ſallading, they would eat very hot and diſagreeably ſtrong-taſted, but being uſed when quite young, as above, whilſt they remain of a palatably warm reliſh, they are highly proper to mix in all winter and ſpring Sallads in particular; though many people are fond of them at moſt times of the year; and many often uſe them alone, particularly in winter and ſpring; they, however, are preferable when mixed with lettuce and the other large ſallading.

All theſe Small Sallad Herbs are raiſed from ſeed, which, for the purpoſe of ſallading are ſowed at all times of the year, when they are required, in the open ground in the ſpring and ſummer, and in winter under frames and glaſſes, and occaſionally in hot-beds; and where a conſtant ſupply is wanted, a repetition of ſowings is requiſite every week, ten days, or a fortnight, being ſowed generally in ſhallow flat drills, very thick, and only juſt covered with earth. But for the particular culture of theſe herbs for ſallading, ſee the article SMALL *Sallad Herbs.*

*Occaſional Sallad Herbs.*—This head comprehends ſeveral other excellent Sallad Herbs; but not being in ſuch general eſtimation as the former ſorts, are only uſed occaſionally, *viz.* Corn Sallad or lamb's lettuce — purſlane—ſpear-mint—water-creſs—borrage and borrage-flowers — naſturtium-flowers — chervil —burnet; and ſometimes red-cabbage—radiſhes — red beet-root—finochia or Azorian fennel — horſe-radiſh — young onions, &c. each of which requiring a particular culture, we refer to their reſpective genera, where their uſes as Sallad Herbs, &c. and mode of propagation, &c. is fully exhibited.

SALSOLA, Glaſs-wort, and Stone-crop-tree.

This genus is compoſed of herbaceous annuals and perennials of but little merit as garden plants, and one ſhrubby ever-green, proper for the ſhrubbery.

Claſs and order, *Pentandria Digynia.*

*Character.*] CALIX, five oval permanent leaves.—COROLLA, no petals.—STAMINA, five very ſhort filaments inſerted into the diviſions of the calix—PISTILLUM, a round germen, a double, or a tripartite ſtyle, and recurved ſtigmas.—PERICARPIUM, an oval unilocular capſule lodged in the calix, having one large ſeed.

There are many herbaceous ſpecies, and and ſome of ſhrubby growth; one of the latter being the only ſort generally cultivated in the Engliſh gardens, *viz.*

SALSOLA *fruticoſa.*

*Shrubby Glaſs-wort, commonly called Stone-crop tree.*] Riſes with a ſhrubby erect ſtem, branching numerous and erectly, four or five feet high, cloſely garniſhed with very ſmall obtuſe fleſhy leaves, like the common Stone-crop on the walls.

This

This ſpecies was formerly retained in the genus *Chenopodium*, but is lately made a ſpecies of *Salſola*.

It inhabits the ſea-ſhores in England, France, and Spain, &c. but is retained in many curious gardens, in the ever-green collection, to adorn the ſhrubbery compartments, allowing it generally a ſheltered ſituation.

The propagation of this ever-green, is by ſuckers, layers, and cuttings; many ſtems generally riſing from the root, which may be divided in autumn or winter, into ſo many ſeparate plants; and layers or cuttings of the young branches in autumn or ſpring will be well rooted by autumn following.

SALVIA, Sage, Clary, &c.

It comprehends under-ſhrubby, herbaceous, and ſhrubby plants, both for the kitchen garden, pleaſure ground, and green-houſe, garniſhed moſtly with ſpear-ſhaped, oval, and oblong leaves, and ſmall, monopetalous, ringent flowers, generally terminating the branches in ſpikes.

Claſs and order, *Diandria Monogynia*.

*Characters.*] CALIX, is monophyllous, wide at the mouth and bilabiated—COROLLA, is monopetalous, tubulous below and ringent above, having the upper lip concave and indented, and the under one broad and trifid. —STAMINA, two ſhort filaments, ſplit into two parts, one of which ſupports the antheræ —PISTILLUM, a quadrifid germen, a long ſlender ſtyle, and bifid ſtigma.—PERICARPIUM, none; four roundiſh ſeeds lodged in the calix.

To this genus *Salvia*, is now joined *Sclarea*, or common Garden Clary, and *Horminum*, or Wild Clary, &c. amounting in the whole to above thirty ſpecies, though not half ſo many that merit culture, as garden plants, conſiſting of hardy under-ſhrubby, and herbaceous perennials for the open ground, and ſhrubby ever-greens for the green-houſe.

*Hardy under-ſhrubby kinds.*

Under this head is comprehended, the common Sage of the kitchen-garden, having many varieties; all under-ſhrubby perennials, exotics from the ſouthern parts of Europe, but are all hardy enough to ſucceed here in the open air, the year round.

[1]SALVIA *Officinalis.*

*Common officinal Sage.*] Riſes with ſhort, under-ſhrubby, hairy ſtems, branching numerouſly from the bottom, two feet high, or more, forming a very buſhy head; ſpear-ſhaped-oval, entire, ſlightly crenated, rough leaves, and the branches terminated by ſpikes of blueiſh flowers, having acute cups.

*Varieties.*] Common broad-leaved green Sage.——Common culinary red Sage, being of a black-red colour.——Broad-leaved, hoary, balſamic Sage, having generally the broadeſt leaves of all the ſorts, ſtanding on long foot-ſtalks.——Wormwood Sage.——Narrow-leaved hoary Sage, commonly called Sage of Virtue, having the baſe of the leaves ſometimes auriculated or indented in form of ears, and ſometimes not eared.——Lavender leaved Sage.——Variegated green Sage.—Variegated red Sage.

They all flower in June and July, and are ſometimes ſucceeded by ripe ſeed in autumn.

This ſpecies and varieties are all very hardy plants, perennial in root, ſtem, and branches, and retain their leaves the year round. They are plants of ſovereign virtue, as the name imports, and the leaves are the only uſeful part, being proper for various culinary purpoſes, and for medical uſes; are alſo often uſed in the manner of tea, by way of medicine, and eaten with bread and butter, and uſed for making ſage-cheeſe, &c. theſe plants therefore, demand culture in every family-garden; and any, or all the ſorts may be cultivated for uſe, they poſſeſſing nearly all the ſame quality; but the red Sage is the moſt commonly cultivated for general kitchen purpoſes; and the broad-leaved hoary Sage, and the Sage of Virtue, is often preferred for tea and other medical uſes, though it is probable any of the ſorts may be equally eligible, as being all varieties of one ſpecies.

*Hardy herbaceous kinds.*

There are many herbaceous ſpecies of *Salvia*, ſome of which formerly compoſed different genera, ſuch as *Sclarea*, or Garden Clary, and *Horminum*, or Wild Clary, &c. are moſtly of foreign growth, but grow freely in our gardens, in the open ground; though they poſſeſs no great merit, except one for culinary and medical uſe; and the others principally as plants of variety, and conſiſt of biennials, perennials, and annuals, garniſhed moſtly with broad rough leaves.

The moſt noted ſpecies are,

[2]SALVIA *Sclarea.* (*Biennial.*)

*Sclarea or common Garden Clary.*] Hath a fibrated biennial root, crowned with broad, oblong, heart-formed, ſerrated, rough, hairy leaves;

leaves; upright, thick ſtems, two feet high, branching oppoſitely, having all the branches terminated by large looſe ſpikes of pale blue flowers, attended by concave acuminated bractea, longer than the corolla and calix.

*Varieties.*] Broad-leaved—Long-leaved—Moſt wrinkled-leaved.

This ſpecies and varieties, are biennials, have all large, thick, woolly leaves, that impart a ſtrong odour, and are the uſeful part of the plants, which are cultivated in kitchen-gardens, for culinary uſes; being raiſed from ſeed annually, and planted out a foot and half aſunder, where they ſpread out into large leaves for uſe, till next ſummer; when they ſhoot up into ſtalk for flower and ſeed; then totally periſh.

[3]SALVIA, *Verbenaca.* (*Perennial.*)

*Verbenaceous common Wild Clary, or Oculus Chriſti.*] Hath a fibrated perennial root, oblong, ſinuated, ſerrated, wrinkled leaves; and declinated ſtems, a foot long, terminated by whorled ſpikes of ſmall blue flowers, having the corolla narrower than the calix.

It grows wild in England, &c. its virtues are ſuppoſed nearly the ſame as the garden-clary; and the ſeed being of a viſcous nature, is ſometimes uſed for clearing the eye from any moat that happens to fall into it, putting one of the ſeeds into one corner, and moving it about, the duſt ſticking thereto, removes it out of the eye.

[4]SALVIA *Indica.* (*Perennial.*)

*Indian Clary with a variegated Flower.*] Hath a fibrated perennial root, upright four-cornered ſtems, three or four feet high, heart-ſhaped, acutely crenated leaves, the upper ones ſeſſile, and half the upper part of the ſtalks adorned with blue variegated flowers, in remote whorls.

[5]SALVIA *Glutinoſa.* (*Perennial.*)

*Glutinous yellow Clary.*] Hath a ſtrong, fibrated, perennial root; heart-ſhaped, ſaggitated, acutely ſerrated, glutinous leaves, upright four-cornered, glutinous ſtems, three or four feet high, terminated by ſpikes of yellow flowers, in cloſe whorls.

[6]SCLAREA *Horminum.* (*Annual.*)

*Horminum, or purple-topped annual Clary.*] Riſes with upright ſtalks, a foot and half high, obtuſe crenated leaves, and the ſtalks terminated by whorled ſpikes of ſmall purpliſh flowers, with coloured bracteal leaves at top.

*Varieties.*] With purple tops—with red tops.

All theſe herbaceous ſpecies flower moſtly in June, and the ſeeds ripen in autumn.

They are all hardy enough to grow in any common ſoil, the firſt of which being for the kitchen-garden, and the others to encreaſe the variety of the herbaceous collection.

*Tender ſhrubby kinds for the Green-houſe.*

Conſiſts of four or five ſhrubby ever-green plants of the Sage kinds, natives of different warm countries, and retained here in our green-houſe collections for variety.

[7]SALVIA *Mexicana.*

*Shrubby Mexican Sage.*] Riſes with a ſhrubby branchy ſtem, eight or ten feet high; having four-cornered, purpliſh branches; oval leaves, pointed at both ends, and ſerrated; and cloſe ſpikes of blue flowers at the ends of the branches.

[8]SALVIA *Africana.*

*Shrubby African Sage.*] Riſes with a ſhrubby branching ſtem, four or five feet high; roundiſh ſerrated grey leaves, truncated and indented at the baſe; and whorled ſpikes of blue flowers towards the ends of the branches.

[9]SALVIA *Aurea.*

*Golden African Sage.*] Riſes with a ſhrubby branching ſtem, ſix or ſeven feet high; roundiſh entire leaves, truncated and indented at the baſe; and ſhort ſpikes of golden coloured flowers at the ends of the branches.

[10]SALLVIA *Pomifera.*

*Pomiferous or Apple-bearing Sage of Crete.*] Riſes with a ſhrubby branchy ſtem, four or five feet high, ſpear-ſhaped, oval, entire, ſlightly crenated, hoary leaves, and ſpikes of blue flowers, having obtuſe cups.

The branches of this ſort have ſometimes glandular protuberances as big as apples; hence the name Pomiferous Sage.

[11]SALVIA *Canarienſis.*

*Canary Sage.*] Riſes with a ſhrubby branching downy ſtem, garniſhed with haſtated-triangular, obtuſe, crenated leaves; and whorled ſpikes of blue flowers at the ends of the branches.

All the above ſpecies of *Salvia*, both hardy and tender kinds, are principally of the verticillate tribe, or ſuch as produce their flowers in a verticillus, or whorls round the ſtalks, ſome having the whorls ſtanding almoſt cloſe, others placed remote (ſee VERTICILLATUS and VERTICILLUS); and the flowers are univerſally monopetalous and rin-

gent, and generally ſmall, but numerous in each ſpike. See the *Characters*, &c.

All the under-ſhrubby and ſhrubby kinds, both hardy and tender ſorts, are durable in root, ſtem, and branches, and remain in leaf the year round.

But the herbaceous kinds are furniſhed with ſtems only in ſummer.

The *Salvia Officinalis*, or common Sage and varieties, conſidered as culinary and medical plants, merit culture in every kitchen-garden, allowing them a moderately dry ſoil, and ſunny ſituation, to enable them to ſtand the winter more effectually; for if planted in moiſt or ſhady places, they are liable to ſuffer by ſevere froſts: they are eaſily raiſed from ſlips, as hereafter directed, and afterwards planted in rows a foot and half aſunder; in which they will grow large buſhy plants, and remain ſeveral years, furniſhing leaves plentifully the year round; which are proper for uſe, both freſh gathered from the plants, and when dried; though for culinary purpoſes, they are beſt when freſh gathered, taking the young ſide-ſhoots or tops, ſlipping or cutting them off: and towards the latter end of ſummer, about July or Auguſt, gather a quantity to dry for tea: being careful in all the gatherings not to ſtump them too cloſe, particularly in autumn and winter.

But the varieties of the common Sage, may alſo be employed to diverſify the fronts of ſmall ſhrubbery clumps, &c. particularly the variegated kinds.

As to the merit of the herbaceous kinds, the *Garden Clary* being a culinary and medical herb, muſt be ſtationed in the kitchen-garden; and all the others, being conſidered principally as plants of variety, as aforeſaid, may be employed to diverſify any of the compartments of the pleaſure ground; all of which herbaceous kinds are eaſily raiſed from ſeed; and the ſeedlings, when two or three inches high, ſhould be planted out. See their *Propagation*, &c.

And as to the tender ſhrubby kinds, they requiring ſhelter from froſt, muſt be kept always in pots, in order for moving to a green-houſe in winter; and as being elegant evergreens, they will effect an agreeable variety among the exotics of that conſervatory.

*Propagation and general Culture of the common Sage kinds.*

The propagation of all the varieties of common Sage, is effected plenteouſly by ſlips or cuttings of the young ſhoots from the ſides of branches; and may alſo be raiſed from ſeed.

By ſlips or cuttings.——The ſlips both of the former and ſame years growth, planted in April or May, will readily grow. Slips of the former years ſhoot may be obtained plentifully any time in ſpring, but ſhould not be planted earlier than April; which however, if planted any time in April, or early in May, they will root freely, and form good plants againſt winter: but young ſlips, ſhoots of the year, are rarely fit for ſlipping before the middle of May, or beginning of June: theſe however moſt readily ſtrike root in a ſhort time, and aſſume a free growth: in either caſe, taking opportunity of moiſt weather, and having recourſe to ſome good buſhy plants; ſlip off a quantity of the moſt robuſt ſide-ſhoots, about five, ſix, or ſeven inches long; trim off all the lower leaves, then in ſome ſhady border proceed to plant them with a dibble in rows, half a foot aſunder, planting them down almoſt to their tops; giving water directly, to ſettle the earth cloſe, as well as to promote an early emiſſion of fibres, repeating the waterings occaſionally in dry weather; and the ſlips will ſoon emit fibres, and ſhoot freely at top: obſerving, if they ſhould ſpindle up with ſlender ſhoots, or run up to flower, it is proper to top them, in order to force out laterals, to aſſume a buſhy growth: thus they will form tolerable buſhy plants by Auguſt or September; when, or in ſpring following, they may be removed, with balls of earth about their roots, and planted where they are finally to remain, either in four feet beds, or in continued rows, a foot and half aſunder, if deſigned as a cloſe plantation for uſe: and thoſe deſigned for the pleaſure ground ſhould be diſpoſed accordingly.

Sometimes Sage, as before obſerved, having grown into large buſhy plants, with numerous branches riſing near the ground, which touching the earth, have formed plenty of fibres at bottom; and that being ſlipped off ſeparately with the fibres thereto, each immediately commences a proper rooted plant; they may either be ſlipped off as the plants ſtand in the ground, or the bunches of plants may be taken up and divided into as many ſeparate ſlips as are furniſhed with roots: and as they thus directly form rooted plants, they may be planted at once where they are to remain.

However, thoſe raiſed from young ſlips, generally form the ſtrongeſt buſhy plants in the end.

By

By Seed.——The raiſing theſe plants from ſeed, is hardly worth practiſing, ſince they may be propagated ſo eaſily by ſlips or cuttings. However, the ſeaſon for ſowing the ſeed, is any time in April, in a bed of light rich earth; ſow it evenly, and rake it in; the plants will ſoon come up: and when about two or three inches high, prick out the ſtrongeſt in nurſery-rows, half a foot aſunder, to gain ſtrength till September or ſpring following; then tranſplant with balls, where they are always to ſtand.

As to the culture of this ſpecies of Sage and varieties, all that is required is, the keeping them clean from weeds in ſummer, cutting down the decayed flower-ſtalks in autumn, and ſlightly digging between the rows in winter; and, if the ground ſhould be impoveriſhed, add a portion of rotten dung occaſionally in autumn, and dig it in.

*Propagation, &c. of the herbaceous kinds.*

All the herbaceous kinds of *Salvia* are eaſily raiſed from ſeed: ſowed in ſpring in the open ground; and the perennial ſorts alſo, by parting the roots.

By Seed.—The Garden Clary, being a biennial, muſt be raiſed every year from ſeed. Sow it in March, in any bed or border of common earth, and rake it in; and when the plants have got leaves two or three inches long, plant them out in ſhowery weather, in rows eighteen inches diſtance, and the ſame diſtance in the rows; they will ſoon get root, and grow large, and furniſh large leaves, fit for uſe in autumn, winter, and the following ſpring.

The perennial ſorts are alſo raiſed from ſeed, ſowed in a bed of light earth in March, and raked in, and the ſeedlings planted out in ſummer, in nurſery-rows till autumn, then tranſplanted into the borders, &c.

And the annual ſorts may be ſowed in ſpring, about the borders, in patches to remain.

By Parting the Roots—The perennial kinds only can be increaſed by this method, which may be performed in autumn, or early in the ſpring.

*Propagation, &c. of the tender ſhrubby kinds.*

All the five tender ſhrubby kinds for the green-houſe, are eaſily propagated by cuttings of the young ſhoots in ſpring and ſummer. If in ſpring, a quantity of cuttings planted in pots, and plunged in a hot-bed, will very ſoon emit roots at bottom, and ſhoots at top, when they ſhould be gradually hardened to the full air. But cuttings planted in ſummer, will often ſtrike without the aid of a hot-bed, planted either in pots, or in a bed of natural earth, under frames and lights, or covered cloſe with hand-glaſſes, ſhaded from the mid-day ſun, and occaſionally watered.

The plants muſt afterwards be potted off ſeparately, and managed as other ſhrubby exotics of the green-houſe. See GREEN-HOUSE PLANTS.

SAMBUCUS, Elder-tree.

This genus conſiſts of hardy deciduous trees and ſhrubs, and herbaceous perennials, proper for ſome uſeful purpoſes in gardening and for diverſifying hardy plantations; alſo for domeſtic and medical uſes in their leaves, flowers, and fruit; are all garniſhed with large winged leaves and numerous ſmall rotaceous flowers, moſtly in cymoſe umbels towards the ends of the branches, ſucceeded by large bunches of black and other coloured berries in autumn.

Claſs and order, *Pentrandria Trigynia.*

*Characters.*] CALIX, is ſmall, monophyllous, five parted, and permanent.—COROLLA, is monopetalous, rotated, and concave, and cut into five obtuſe reflexed ſegments.—STAMINA, five awl-ſhaped filaments, having roundiſh antheræ.—PISTILLUM, an oval germen under the corolla; no ſtile, but inſtead thereof, a ſwelling glandule and three obtuſe ſtigmas—PERICARPIUM, a roundiſh unilocular berry including three angular ſeeds.

There are only four ſpecies in this genus, three of which are of the tree and ſhrub kind, and one is an herbaceous perennial: two of them are common in England, &c. namely, the Common Black Elder-tree, and the Herbaceous Dwarf Elder; the other two are foreigners, one being from the ſouth of Europe, and the other of America; but are all hardy enough to grow here in any ſituation.

*Tree and ſhrub kinds.*

'SAMBUCUS *Nigra.*

*Common Black Elder-tree.*] Riſes with a tree-ſtem, branching numerouſly into a large ſpreading head, twenty or thirty feet high; pinnated leaves, of two or three pair of oval lobes and an odd one; and large, cymoſe, five-parted umbels of white flowers towards the ends of the branches, ſucceeded by large

bunches of black, and other different coloured berries, in the varieties.

*Varieties.*] Common Black-berried Elder-tree.—White-berried Elder.—Green-berried Elder.—Laciniated or Parſley-leaved Elder, having the folioles much laciniated, ſo as to reſemble parſley-leaves.—Gold-ſtriped-leaved Elder.—Silver-ſtriped Elder.—Silver-duſted Elder.

All theſe being varieties of *Sambucus Nigra*, have, for the general part, five or ſeven-lobed leaves; are of a tree-like growth, and quinquepartite umbels of flowers and fruit; the common Black-berried Elder, however, is the moſt generally known variety, and the moſt commonly cultivated; ſometimes as ſtandards among foreſt trees, but more frequently in forming outward hedges expeditiouſly, as being a very faſt grower; likewiſe often in detached ſtandards for the ſake of their berries for making of Elder-wine; and all the varieties may alſo be employed for diverſifying plantations: all the varieties make very ſtrong ſhoots, full of a white pithy ſubſtance, but becomes woody as they advance in age, and the old wood becomes ſolid and very hard, fit for many purpoſes: all of which varieties will grow in any ſituation, and may be raiſed very expeditiouſly by cuttings of the year-old ſhoots. See the *Propagation*.

The bark, buds, leaves, and flowers are uſed in medicine, being ſovereign in many diſorders.

And the ripe berries make an excellent cordial wine.

[2]SAMBUCUS *Racemoſa.*

*Racemoſe Red-berried Elder.*] Riſes with a tree-like ſtem, branching ten or twelve feet high, having reddiſh-brown branches and buds; pinnated leaves of ſix or ſeven oval deeply-ſawed lobes, and compound, oval, racemous cluſters of whitiſh-green flowers, ſucceeded by oval cluſters of red berries.

This is a reſident of the mountainous parts of the ſouth of Europe, and is retained in our gardens as a flowering ſhrub, having a peculiar ſingularity in its oval-cluſtered flowers and berries.

[3]SAMBUCUS *Canadenſis.*

*Canada Shrubby Elder.*] Riſes with a ſhrubby ſtem, branching eight or ten feet high, having reddiſh ſhoots; ſomewhat bi-pinnated leaves, often ternate below, the others compoſed of five, ſeven, or nine oval lobes; and towards the ends of the branches, cymoſe, quinquepartite umbels of flowers, ſucceeded by blackiſh red berries.

*Herbaceous kind.*

[4]SAMBUCUS *Ebulus.*

*Ebulus, or Herbaceous Elder; commonly called Dwarf Elder.*] Hath a thick, creeping, tough, perennial root, ſpreading widely around; herbaceous, ſtrong, pithy, green ſtems three or four feet high; large pinnated leaves, of from three or four to ſix or ſeven pair of long, acute-pointed, indented lobes, with leafy ſtipula, and large, cymoſe, three-parted umbels of white flowers, ſucceeded by black berries in autumn.

This is a perennial, and grows wild in England in hedges, banks, and fields, but is admitted in ſome gardens for variety and medical uſes.

*Variety.*] Laciniated-leaved, having the folioles beautifully jagged into ſegments.

All the ſorts of Elder are of the deciduous tribe, very hardy, and grow freely any where; are generally free ſhooters, but particularly the *Common Elder* and varieties, which make remarkably ſtrong, jointed ſhoots, of ſeveral feet length, in one ſeaſon; and they flower moſtly in ſummer, except the *Racemoſe Elder*, which generally begins flowering in April; their modes of flowering being in cymoſe umbels, and racemoſe cluſters, as in their reſpective deſcriptions; riſing generally towards the termination of the preceding year's ſhoot, each bunch conſiſting of numerous ſmall, wheel ſhaped, concave, ſemi-quinquefid flowers; and the bunches being large, ſpreading, and very abundant, are exceedingly conſpicuous; but they emit a moſt diſagreeable odour; are ſucceeded in moſt of the ſorts, by large bunches of ripe berries in autumn, which, although very unpalatable to eat, are in high eſtimation for making that well known cordial liquor called Elder wine, particularly the common Black-berried Elder.

The merit of Elders in gardening may be both for uſe and ornament, eſpecially in large grounds.

With reſpect to the tree and ſhrub kinds, the Common Elder may be introduced occaſionally in foreſt-tree plantations, and as detached ſtandards, in any bye-place, for the ſake of their berries, as before hinted; and all the ſorts may be employed to diverſify large ornamental plantations, diſpoſed, however,

ever, but thinly, particularly the Common Elders, as their flowers ſend forth a ſtrong diſagreeable ſcent, ſo ſhould be but ſparingly introduced near much frequented places; however, the different varieties thereof may be diſperſed in out-plantations ſo as to effect an agreeable diverſity; but as to the *Sambucus Racemoſa* and Canada Elder, they may be diſpoſed in any of the ſhrubbery compartments, more particularly the former, which will exhibit a conſpicuous ſingularity in its mode of flowering and fruiting.

And the Common Elder, being a very faſt grower, is often employed in forming outward hedges along ditch-ſides, or the ſides or tops of banks, where it is neceſſary to form a hedge-fence as cheap and expeditiouſly as poſſible, which may be raiſed from cuttings of the ſtrong ſhoots of from one or two to five or ſix feet long, planted at once where the hedge is intended, a foot diſtance in the row, and from one to two feet deep in proportion to their length; but the ſhort and middling cuttings generally form the cloſeſt hedge from the bottom: though long cuttings are ſometimes uſed in order to form an immediate fence, which being arranged chequer-ways will render the fence ſtronger, and more immediately fencible againſt cattle. The hedges, raiſed by either method, if deſigned merely as a fence, ſhould be trained only to a moderate height, and kept cloſe and regular by an annual clipping: but ſome ſuffer theſe Elder hedges to grow up high without any trimming, eſpecially at top, permitting them to branch out on each ſide upward, in order to produce large crops of berries, either for private uſe or for ſale.

As to the *Ebulus*, or Dwarf Elder, it is ſometimes admitted in gardens, by way of variety, in the herbaceous collection, and for medical uſe; obſerving, as this perennial multiplies exceedingly by its creeping root, it muſt be occaſionally trimmed at bottom to confine it within moderate limits.

*Method of Propagation, &c.*

All the tree and ſhrub Elders are propagated very expeditiouſly by cuttings of the young yearling ſhoots, and may alſo be eaſily raiſed from ſeed.

By Cuttings.—Cuttings of Elder ſhoots, in lengths of from one or two to five or ſix feet, very readily grow, and autumn, or any time in open weather, from October till ſpring, is the proper ſeaſon for planting them; chuſing cuttings of the laſt year's ſhoots, not thoſe that are green and ſucculent, but ſuch as are become a little woody; obſerving, that if they are deſigned for nurſery-rows, to train occaſionally for different purpoſes, cut them into ſhort lengths of about three joints, planting them in rows two feet aſunder, each cutting two parts of three in the ground: they will readily emit roots in the ſpring, and ſhoot ſtrongly at top in ſummer, training them for the purpoſes wanted, ſome to run up with a ſingle ſtem for ſtandards, others to form buſhy ſhrub-like plants, &c. and in a year or two they may be tranſplanted finally, if required.

Or if intended to form an Elder-hedge, cuttings of the Common Elder, of the above length, may be planted at once, where the hedge is intended, either in a ſingle or double row, about a foot aſunder.

But in ſome particular caſes, large cuttings of from a yard to five or ſix feet long, or more, particularly of the Common Elder, may be planted in any moiſt ſituation, or along ditch-ſides, either to form ſpreading ſtandards, as ſoon as poſſible, for producing plenty of berries, or to form a growing hedge immediately fencible, as it were; in either caſe, planting the cuttings of this length half a yard or two feet deep, and ten or fifteen feet aſunder, for the ſtandards, and one foot apart for the hedge, arranged either ſlanting or chequer-ways, as before obſerved.

The planting of all theſe cuttings may be performed either with a long iron-ſhod dibble, or with an iron crow, or large ſtake driven into the ground to make holes for the long ſets: or, ſometimes, in moiſt, ſoft, deep ſoils, the ends of the cuttings being ſharpened, they may be thruſt into the ground a proper depth, eſpecially the moderate-ſized cuttings.

By Seed.—This mode of propagating Elders is not generally practiſed, they being much more expeditiouſly raiſed from cuttings as above; however, they may alſo be eaſily raiſed in abundance from the ſeed or berries, ſowed in autumn, in beds of common earth, half an inch deep, and managed as other nurſery ſeedling trees.

The ſcattered or ſelf-ſowed ſeeds of theſe trees, falling any where accidentally, either on the ground, in the crevices of old walls, or hollow trees, grow without care or trouble, and produce young plants.

The

The fourth ſort, *Sambucus Ebulus*, is propagated very plenteouſly by parting the roots in autumn.

SAND, See COMPOSTS, EARTH, LOAM, &c.

SANGUINARIA, Puccoon.

It conſiſts of one low, herbaceous, flowering perennial for the flower borders, riſing with a low ſtalk, crowned with octa-petalous flowers.

Claſs and order, *Polyandria Monogynia.*

*Characters.*] CALIX, two oval concave leaves that fall away.—COROLLA, eight oblong, obtuſe, ſpreading petals.—STAMINA, many ſhort filaments, having ſingle antheræ —PISTILLUM, an oblong compreſſed germen, no ſtyle, but a thick, two-furrowed, permanent ſtigma.—PERICARPIUM, an oblong-bellied bivalvular capſule, having many roundiſh acute ſeeds.

There is but one ſpecies, *viz.*

SANGUINARIA *Canadenſis.*

*Canada Sanguinaria, or Puccoon.*] Hath a tuberous fibrated root, crowned with large, roundiſh, indented leaves, and low, ſlender, leafleſs ſtalks, terminated each with one large, octa-petalous, pure-white flower.

*Varieties.*] Single-flowered,——Semi-double-flowered,—Full-double-flowered.

They are all perennial in root, but annual in ſtalk and leaves; the ſtalks riſing in the ſpring, and flower in April, very ornamentally.

All the varieties are hardy, and proper to intermix with other low ſpring flowers in the fronts of the borders and other compartments; ſhould be planted in autumn, when the ſtalks and leaves are decayed, any time from Auguſt till October, planting them about a foot, or fifteen or eighteen inches from the edge of the border, and about two or three inches deep, and they will all flower in ſpring following.

They are all eaſily propagated by parting the roots in autumn, when the leaves and ſtalks decay.

SANTOLINA, Lavender Cotton.

This genus furniſhes low, under-ſhrubby ever-greens, and herbaceous perennials, for ornamenting the pleaſure-ground and for medical uſe, garniſhed with very ſmall hoary leaves, ſimple and pinnated, in different ſpecies, and compound rayleſs flowers terminating the branches.

Claſs and order. *Syngeneſia Polygamia Superflua.*

*Characters.*] CALIX, a hemiſpherical, imbricated, general cup.——COROLLA, a compound uniform flower, conſiſting of numerous hermaphrodite funnel-ſhaped florets. —STAMINA, five fine hair-like filaments, and cylindric tubulous antheræ.—PISTILLUM, an oblong tetragonous germen, filiforme ſtyle, and two oblong, depreſſed, truncated ſtigmas.—PERICARPIUM none; each floret is ſucceeded by one four-cornered ſeed, reſting on the common receptacle.

There are four ſpecies; two of them are ſhrubby and two are herbaceous; all, originally, exotics from the ſouth of Europe, but hardy enough to proſper here, in the open ground, all the year.

*Shrubby kinds.*

Conſiſts of two low, ſhrubby, buſhy perennials, compriſing ſome varieties, all durable in root, ſtem, and branches, and retain their leaves the year round, moſtly aſſuming a hoary-whitiſh appearance.

[1]SANTOLINA *Chamæ Cypariſſus.*

*Chamæ Cypariſſus, Dwarf Cypreſs, or Common Lavender Cotton.*] Riſes with a low ſhrubby ſtem, very branchy and buſhy, two or three feet high, very cloſely garniſhed with ſmall taper, quadriſariouſly-indented hoary leaves; and the branches terminated by long peduncles, each ſupporting one compound yellow flower.

[2]SANTOLINA *Roſemariniſolia.*

*Roſemary-leaved Lavender Cotton.*] Riſes with a ſhrubby ſtem, branching numerouſly from one or two feet to a yard high, in different varieties, cloſely garniſhed with ſmall linear hoary leaves, with tuberculated margins, and the branches terminated by long pedunculi, each ſuſtaining one compound pale-yellow flower.

*Varieties of this.*] Greater Roſemary-leaved Lavender Cotton, growing about a yard high —Minor Roſemary-leaved Lavender Cotton, with blunt leaves growing in cluſters—Dark-green leaved—Villoſe hoary-leaved, with a large flower.

The above two ſhrubby Lavender Cottons, and varieties, are retained in our gardens, both as plants of ornament and for medicinal uſe, the leaves, flowers, and ſeeds being proper, particularly the firſt ſpecies.

*Herbaceous kinds.*

[3]SANTOLINA *Anthemoides.*

*Anthemis-leaved Lavender Cotton.*] Hath fibrous perennial roots, herbaceous, very branchy, hairy ſtalks, eight or ten inches high; bipinnated, many-parted downy leaves

leaves like thoſe of chamomile, and the branches terminated by long pedunculi, each ſuſtaining one compound yellow flower.

4 SANTOLINA *Alpina.*

*Alpine Lavender Cotton.*] Hath fibrey perennial roots, herbaceous unbranching ſtalks eight or ten inches high, bipinnated grey leaves, and pedunculi terminated by one yellow flower.

The two ſhrubby ſpecies and varieties, being hardy, low, buſhy ever-greens, are proper ornamental plants for adorning the fronts of ſmall ſhrubbery compartments, where, with their hoary, and lighter and darker-green leaves, in different varieties, they will exhibit an agreeable variety. Some may alſo be potted, to move occaſionally, to embelliſh any particular compartment in aſſemblage.

The herbaceous kinds being alſo hardy, are likewiſe employed occaſionally to cauſe variety in the pleaſure ground.

*Method of Propagation.*

The ſhrubby kinds are propagated the moſt expeditiouſly by ſlips or cuttings of the young ſhoots, and may alſo be raiſed from ſeeds.

By Slips, or Cuttings.——In ſpring, or early in ſummer, ſlip or cut off a quantity of the laſt year's ſhoots, five or ſix inches long, clear away all the lower leaves, then plant them in any ſhady border in rows half a foot aſunder, water them directly, and repeat it in dry weather, and they will root freely and form tolerable plants by autumn, when, or in the following ſpring, they may be tranſplanted with balls, in wider nurſery-rows, &c. or ſome of the largeſt where they are finally to remain.

By Seed.——Sow it in the ſpring, in a bed of light earth, either in ſhallow drills or all over the ſurface, covering it a moderate depth; they will grow the ſame year, and towards autumn, or in the next ſpring, prick them out half a foot aſunder, and after having a year's growth they muſt be tranſplanted to wider diſtances.

The two herbaceous kinds are propagated by parting the roots in autumn; and by ſeed in the ſpring, ſowed in any common earth and raked in, and when the ſeedlings are a little advanced in growth plant them out.

SAPONARIA, Sope-wort.

The plants are herbaceous perennials and annuals, of hardy temperature, ſome of the former being cultivated as flowering plants for variety, &c. producing annual ſtalks two or three feet high, terminated by bunches of pentapetalous flowers.

Claſs and order. *Decandria Digynia.*

*Characters.*] CALIX, is monophyllous, tubular, quinquedented and permanent.—— COROLLA, five petals, narrow and angular below, and broad, obtuſe, and plane above. —STAMINA, ten awl-ſhaped filaments, inſerted alternately into the ungues or tails of the petals, having long incumbent antheræ. —PISTILLUM, a taper germen, two parallel ſtyles crowned with acute ſtigmas.—PERICARPIUM, a cylindric, covered, unilocular capſule, having many ſmall ſeeds.

There are ſeveral ſpecies, one of which only is common to the Engliſh gardens, *viz.*

SAPONARIA *Officinalis.*

*Common Sope-wort.*] Hath a creeping, very ſpreading, perennial root, upright-jointed ſtalks two feet high or more, garniſhed with oval-lanceolate oppoſite leaves, and the ſtalks terminated by umbel-like bunches of purpliſh flowers.

*Varieties.*] Common Single-flowered Sopewort—Double-flowered—Hybrid Sopewort with concave leaves.

This ſpecies grows wild in England, but is ſometimes retained in gardens for variety, particularly the Double-flowered and Hybrid concave-leaved ſort; they all ſucceed in any common ſoil, are durable in root, which ſend up ſtalks annually in the ſpring, and flower in July, continuing in ſucceſſion till September,

The root and leaves are uſed in medicine; and the leaves were formerly uſed inſtead of Sope, and by being boiled in water afford a ſope-like froth, proper for waſhing cloaths; hence the name Sope-wort.

Theſe plants are eaſily propagated by parting the roots, any time in open weather, from autumn till ſpring.

SATUREJA, Savory.

This genus is compoſed of low, under-ſhrubby, and herbaceous aromatic perennials and annuals, for the kitchen-garden, pleaſure ground, and green-houſe, ornamented with ſmall narrow leaves, and ſmall monopetalous ringent flowers at the ſides and termination of the branches.

Claſs and order. *Didynamia Gymnoſpermia.*

*Character.*] CALIX, is monophyllous, erect, tubulous, ſtriated, five-parted at top, and permanent—COROLLA, is monopetalous and ringent, with a cylindric tube, and ſimple chaps, having the upper-lip acutely emarginated,

ginated, and the under-lip three-parted. ——STAMINA, two long and two ſhort filaments, crowned with connivent antheræ.—PISTILLUM, a quadrifid germen, a briſtly ſtyle, having two briſtly ſtigmas.—PERICARPIUM, none, four roundiſh naked ſeeds lodged in the permanent calix.

There are eight or nine ſpecies; the following ſix of which are the ſorts principally known in our gardens, being all exotics from different countries; three of which are hardy, and the others tender, requiring ſhelter of a green-houſe in winter.

*Hardy kinds.*

Conſiſts of three ſpecies; two low under-ſhrubby, and herbaceous perennials, and one annual; all of the aromatic tribe; two of which, Winter Savory and Summer Savory, are eminent pot-herbs, for the kitchen-garden and for medical uſe.

[1]SATUREJA *Montana.* (*Perennial.*)

*Mountain Satureja, commonly called Winter Savory*] Riſes with a low ſhrubby ſtem, branching numerouſly about a foot high; cloſely garniſhed with ſmall linear-lanceolate leaves, many together at the joints; and at the ſides of the branches, ſhort-forked peduncles, ſupporting ſmall whitiſh-red flowers.

This is a fine aromatic perennial, durable in root, ſtem, and branches, and continues in leaf the year round.

[2]SATUREJA *Virginiana.* (*Perennial.*)

*Virginian Savory.*] Riſes with upright, ſtiff, angular ſtalks, branching a foot and half high; ſmall ſpear-ſhaped, pointed, ſtiff leaves, ſcented like penny-royal; and the branches terminated by white flowers in round heads.

[3]SATUREJA *Hortenſis.* (*Annual.*)

*Garden Satureja, or Summer Savory.*] Riſes with upright ſlender ſtalks, branching by pairs a foot or more high; narrow, ſpear-ſhaped, ſtiff, odoriferous leaves, and from the ſides of the branches pale-red flowers, two on each peduncle.

This is a choice aromatic annual pot-herb for the kitchen-garden.

*Green-houſe kinds.*

They conſiſt of three low, under-ſhrubby, ever-green, aromatic perennials, exotics from warm countries, and require ſhelter here in winter.

[4]SATUREJA *Juliana.*

*St. Julian's Thymbra, or True Savory*] Riſes with erect, ſlender, ligneous ſtalks, branching moderately nine or ten inches high; narrow, ſpear-ſhaped, finely-ſcented leaves, and ſmall white flowers, in whorled bunches, round the branches.

[5]SATUREJA *Thymbra.*

*Legitimate Thymbra.*] Riſes with ſhrubby ſtems, branching about two feet high; oblong, acute, odoriferous leaves, and reddiſh flowers, in thick hiſpid whorls round the branches.

[6]SATUREJA *Capitata.*

*Capitated Savory, or Legitimate Thyme.*] Riſes with ſhrubby long ſtalks, branching eight or nine inches high; narrow, carinated, punctated, ciliated leaves, and the branches terminated by capitated ſpikes of white flowers.

All theſe plants flower in June and July; the flowers are ſmall, and each formed of one ringent petal, and in ſome ſorts are ſucceeded by ſeeds in our gardens, particularly the Winter and Summer Savory.

With reſpect to the three hardy ſpecies, the two firſt are perennial, and the third is annual; are all hardy enough to ſucceed in the open ground; the firſt and third ſort merit culture, in every kitchen-garden, as aromatic pot-herbs and as medical plants; and all the three ſorts may alſo be employed to diverſify the compartments of the pleaſure garden, &c. allowing them generally a dry ſoil.

And the tender kinds, requiring ſhelter from froſt, muſt be kept in pots, and placed among the green-houſe exotics, where they will encreaſe the variety, managing them as other ſhrubby exotics of that collection.

*Method of Propagation for all the Sorts.*

The three hardy ſorts are propagated, ſome by ſeed, and the two perennials alſo by ſlips or cuttings of the branches, and by parting the roots.

By Seed.—The Winter and Summer Savory furniſh plenty of ſeed annually in autumn, by which they may be raiſed in abundance, ſowed in the open ground in ſpring; therefore, in the latter end of March, or in April, dig a bed or border of light rich earth, and ſow the ſeed thereon moderately thick, and rake them in evenly, they will ſoon come up; being then careful to give occaſional weeding, and if the plants are any where too much crouded, thin them moderately, and they may either remain where ſowed, thinning them to due diſtances, or may be tranſplanted.

Obſerve,

Obſerve, however, of the Winter Savory, that when the ſeedlings are about two or three inches high, it is eligible to plant out a quantity of the ſtrongeſt, in moiſt weather, in nurſery-rows ſix inches aſunder, to remain till September or ſpring following, then to be tranſplanted with balls where they are finally to remain, in rows a foot aſunder.

But the annual or Summer Savory, may either remain where ſowed, thinning the plants to ſix or eight inches diſtance; or when two inches high, a quantity may be pricked out in beds, in rows the above diſtance; in either caſe the plants will become uſeful in June or July until winter, when they will totally periſh.

Or, when deſigned to have the Winter or Summer Savory remain where ſowed, the ſeeds may be ſowed in ſhallow drills, either in beds, or along the edge of any bed or border by way of an edging.

By Slips, &c.—In the ſpring, or early part of ſummer, the common Winter Savory may be encreaſed plentifully by ſlips or cuttings of the young ſhoots or branches, which very freely take root; therefore, ſlip or cut off a quantity of young ſhoots five or ſix inches long, plant them with a dibble, in any ſhady border, in rows ſix inches aſunder, giving occaſional waterings, and they will be well rooted by September, when they may be tranſplanted with balls when wanted; thoſe for the kitchen-garden plant in rows a foot aſunder, or may be planted in rows along the edge of any border, or other compartment, by way of an edging, as before obſerved of the ſeedlings.

By parting the Roots.—The Virginian Savory, in particular, may be propagated in plenty by parting the roots in autumn or ſpring.

The three tender kinds are very eaſily propagated by ſlips or cuttings in May, June, or July, chuſing ſome of the moſt robuſt young ſide-ſhoots, ſlipping or cutting them off, and plant them in pots, ſeveral in each, which, if plunged in a hot bed, will greatly facilitate their rooting, or, in default thereof, place them under a frame and lights, or ha d-glaſſes, ſhading them from the ſun, and give water, they will ſoon ſhow ſings of growth, when let them enjoy the free air, and, when well rooted, towards autumn tranſplant them in ſeparate pots.

As theſe kinds are apt to dwindle off in three or four years, it is therefore proper to continue raiſing a freſh ſupply of new plants accordingly.

SAXIFRAGA, *Saxifrage.*

This genus comprehends many low, hardy, herbaceous perennials; ſome of which producing ornamental flowers, are proper for the decoration of the pleaſure ground, riſing moſtly with annual ſtalks, ſome a foot high or more, others not ſo much, adorned with ſmall lobated and entire leaves, and terminated with ſmall pentapetalous flowers.

Claſs and order, *Decandria Digynia.*

*Characters.*] CALIX, is ſhort, monophyllous, five-parted, and permanent.—COROLLA, five potent petals.—STAMINA, ten awl-ſhaped filaments, with roundiſh antheræ.—PISTILLUM, a roundiſh acuminated germen, two ſhort ſtyles and obtuſe ſtigmas.—PERICARPIUM, an oval, biroſtrated, or two-beaked, unilocular capſule, containing numerous ſmall ſeeds.

There are upwards of thirty ſpecies of this genus, but not more than five or ſix that are eſteemed for general culture, which are conſidered generally as flowery plants, for variety in the pleaſure-ground, as aforeſaid.

The principal ſpecies are,

[1]SAXIFRAGA *Granulata.*

*Granulous-rooted, Common White Saxifrage.*] Hath a granulous perennial root, being compoſed of numerous ſmall tuberous parts like grains of corn, crowned with many ſmall, kidney-ſhaped, lobated leaves, upright branchy ſtalks a foot high; garniſhed alſo with kidney-ſhaped leaves, and terminated by tufted bunches of numerous white flowers.

*Varieties.*] Common Single-flowered of the meadows--Double flowered of the gardens, being very ornamental.

They flower in April and May, which, when in large tufts, as many ſtalks riſe cloſe together, they make a very ornamental appearance, particularly the Double-flowered variety, and may be diſpoſed either in patches, towards the fronts of borders, or in pots.

[2]SAXIFRAGA *Cotyledon.*

*Cotyledon Saxifrage, with a paniculated and pyramidally branching ſtalk.*] Hath a thick, fibrated, perennial root, crowned with tongue-ſhaped cartilaginous-ſawed leaves, in an aggregate cluſter like houſe-leek, an upright paniculated branching ſtalk, a foot or more high, having all the branches terminated by panicles of white flowers.

*Varieties.*] Common Paniculated Cotyledon Saxifrage——Pyramidal Saxifrage, branching

branching almoſt from the bottom a foot and half high, with the branches diminiſhing gradually in length upward, and all of them terminated by ſpreading white flowers; the whole forming a beautiful pyramid.

[3]SAXIFRAGA *Umbroſa.*

*Umbroſe Saxifrage, commonly called London Pride, or None-ſo-pretty* ] Hath a fibrated perennial root, crowned with ob-oval nearly retuſed leaves in circular heads, having cartilaginous crenated margins; and upright, ſlender, naked, paniculated ſtalks a foot or more high, terminated by panicles of whitiſh flowers ſpotted with red, having alſo red piſtils.

This is an old inhabitant of our gardens, and was formerly planted for edgings, though it is rather improper for that purpoſe, but being diſpoſed in tufts about the borders, it will effect a proper variety.

[4]SAXIFRAGA *Hypnoides.*

*Cuſhion Saxifrage, commonly called Lady's Cuſhion.*] Hath a fibrated perennial root, crowned with narrow trifid leaves, many trailing ſpreading ſhoots, garniſhed with entire and trifid leaves, and upright, almoſt naked ſtalks, but a few inches high, terminated by ſmall bunches of whitiſh flowers.

The trailing ſhoots and leaves of this plant forming a cloſe roundiſh bunch like the ſhape of a cuſhion or pillow, hence it is commonly called Lady's Cuſhion.

[5]SAXIFRAGA *Punctata.*

*Spotted Saxifrage.*] Hath a fibrous perennial root, crowned with roundiſh indented leaves, in a circular cluſter, on long foot-ſtalks, and upright, ſlender, naked ſtalks a foot high, terminated with panicles of white flowers ſpotted with red punctures.

[6]SAXIFRAGA *Hirſuta.*

*Hairy Saxifrage.*] Hath a fibrous perennial root, crowned with heart-ſhaped-oval retuſe leaves, with cartilaginous crenated edges, and hairy leafleſs ſtalks, near a foot high, terminated by panicles of white flowers, having a few red ſpots.

Theſe ſix ſpecies are all hardy perennials, generally conſidered as flowery plants; but the firſt three ſorts are the moſt commonly cultivated, and have the greateſt merit as plants of ornament; however, all the ſorts may be employed for variety, and diſpoſed in patches towards the fronts of flower-borders, &c. and the firſt and ſecond ſort are alſo often planted in pots to move to any place occaſionally, more particularly the Granulous Double White Saxifrage, and the Cotyledon Pyramidal Saxifrage, both of which demand ſingular attention for their ornamental flowers.

They are all durable in root, and ſome ſorts alſo retain their leaves all the year; the Granulous Saxifrage, however, is deciduous, and all the ſorts produce flower-ſtalks annually in the ſpring, flowering, in the different ſorts, from April till June; the firſt ſpecies and variety generally flower in April and May, and the others in May and June.

All the ſorts are very eaſily propagated by off-ſets of the roots and heads, which they furniſh abundantly.

The firſt ſort multiplies exceedingly by its granulous roots, which, towards autumn, when their ſtalks and leaves decay, may be divided, not too ſmall, but in little bunches, and let them be planted again directly, ſome in the open borders, &c. and ſome in pots, forming a ſmall hollow in the earth an inch deep, in which depoſit the bunch of roots, covering them the ſame depth with earth; and being thus planted in bunches, they will ſend up ſeveral ſtalks in a cluſter together, and exhibit a large tuft of flowers.

The ſecond and third ſpecies multiply very faſt by ſide off-ſets from the head or crown of the plant, each furniſhed with roots, which may be parted or ſeparated in autumn, or early in the ſpring, and planted where they are finally to remain, obſerving to plant ſome of the Cotyledon pyramidal ſort in pots, and the others in patches towards the front of the borders.

The other three ſorts are alſo propagated by off-ſets, and parting the roots, in autumn or ſpring.

SCABIOSA, Scabious.

This genus of plants conſiſts of herbaceous annuals, biennials, and perennials, for ornament and variety in the pleaſure-ground, and ſhrubby perennials for the green-houſe, garniſhed with leaves of different forms in the different ſpecies, and terminated with numerous aggregate heads of flowers, each head compoſed of many ſmall florets contained in one general calix.

Claſs and order, *Tetrandria Monogynia.*

*Characters.*] CALIX, a ſpreading many-leaved general cup, containing many florets, each floret having a double calix.—COROLLA, each floret of the aggregate is monopetalous, tubulous, and cut into four or five parts at top.—STAMINA, four awl-ſhaped filaments in each floret, having oblong incumbent

cumbent antheræ.—PISTILLUM, a germen under each floret, and a ſlender ſtyle, crowned with an obtuſe, obliquely emarginated ſtigma. —PERICARPIUM, none; a ſingle, oblong, oval ſeed to each floret crowned with the calix.

There are many different ſpecies of Scabioſa; a few only are in eſteem for general culture, principally as plants of ornament and variety, conſiſting of ſome hardy herbaceous annuals, biennials, and perennials; and three ſhrubby exotics for the green-houſe.

*Hardy herbaceous kinds.*

This head comprehends ſome remarkable flowery annuals and biennials, and ſome perennials for variety, riſing with upright branchy ſtems, two or three feet high or more, garniſhed with leaves below, and numerous flowers at top; obſerving, the firſt two are annuals, the reſt perennial; but the annual kinds are the moſt generally known, and cultivated as ornamental plants.

[1]SCABIOSA *Atropurpurea. (Annual,* &c.)
*Dark-Purple Sweet Indian Scabious.*] Hath a fibrous annual root, crowned with a large tuft of oblong leaves, variouſly jagged and cut on the edges, and often into ſegments, and upright ſtems, branching numerouſly, on every ſide, three feet high or more; and from the ſides and ends of the branches, numerous dark-purple, and other coloured flowers, in the varieties, having all quinquefid florets and awl-ſhaped receptacles.

*Varieties.*] Common Dark-purple Sweet Scabious — Pale-purple-flowered — Red-flowered—White-flowered—Black-flowered —Hen and Chicken-flowered, having ſeveral ſmall flowers ariſing from the ſides of the main one—Striped-flowered, &c.

They all flower in June, continuing in plentiful ſucceſſion till September, forming a very ornamental appearance, and are ſucceeded by abundance of ripe ſeeds in autumn.

All the varieties of this ſpecies are very hardy, and may be conſidered both as annuals and biennials, for, being raiſed from ſeed forward in the ſpring, they will run up to ſtalk and flower the ſame year, and generally periſh the following winter; but if not ſowed till ſummer, they produce only leaves that year, encreaſe in ſtrength, and remain vigorous till ſpring following, when they will ſhoot up vigorouſly into very ſtrong branchy ſteme, and produce an amazing quantity of flowers from June till autumn, and furniſh plenty of ſeeds, then totally periſh root and ſtem towards winter, ſo that a freſh ſupply muſt be annually raiſed from ſeed both as annuals and biennials.

[2]SCABIOSA *Stellata. (Annual, &c.)*
*Starry Spaniſh Scabious.*] Hath a fibrous annual root, crowned with oblong leaves, variouſly cut on the edges, and upright ſtems branching numerouſly about a yard high, garniſhed with oblong, finely cut leaves, and the upper parts ſupporting numerous purple flowers compoſed of quinquefid ſtar-ſhaped florets with roundiſh receptacles, flowering in July.

This ſort may alſo be treated both as an annual and biennial, as obſerved of the former ſort; but more commonly as an annual.

[3]SCABIOSA *Arvenſis.*
*Common Field Scabious.*] Hath fibrous perennial roots, upright hiſpid ſtems, branching three feet high, garniſhed with pinnatifid leaves, with the lobes at a diſtance, and blue flowers, having radiated florets.

*Varieties.*] With reddiſh flowers—Purple-flowered, &c.

It grows wild in the fields and meadows in England, but is ſometimes cultivated for variety.

[4]SCABIOSA *Succiſa.*
*Succiſa, or Devil's Bit (Morſus Diaboli.)* Hath a thick, ſhort, downright root, terminated abruptly as if bit off, crowned with oval, ſpear-ſhaped, entire leaves; upright ſingle ſtalks two feet high, with the branches growing near, and terminated by blue flowers with equal quadrifid florets.

This grows naturally in England, &c. in paſtures and woods.

[5]SCABIOSA *Alpina.*
*Alpine Blue Scabious.*] Hath a ſtrong, fibrous, perennial root, ſending up ſeveral ſtrong ſtems, branching four or five feet high, garniſhed with pinnated leaves of four or five pair of ſpear-ſhaped ſawed lobes; and from the upper parts, whitiſh-yellow drooping flowers, having quadrifid equal florets.

[6]SCABIOSA *Argentea.*
*Silvery Oriental Scabious.*] Riſes with low ſlender ſtems, dividing into ſpreading branches, pinnated ſilvery-white leaves, with ſpear-ſhaped lobes, and the branches terminated by long, naked, ſmooth peduncles, ſuſtaining ſmall pale flowers with quinquefid florets.

[7]SCABIOSA *Gramina.*

*Graſs-leaved Silvery Scabious of the Helvetian Mountains.*] Hath a fibrous perennial root, ſending up herbaceous ſtalks half a yard high, garniſhed below with very narrow, lanceolate, entire ſilvery leaves; and the upper part ſupporting pale-blue flowers, having quadrifid florets.

All theſe herbaceous kinds are very hardy plants, that ſucceed in any common ſoil of a garden, and in almoſt any ſituation.

But the two annual ſorts are the moſt generally known and cultivated, and have the greateſt merit as ornamental flowery plants.

*Tender Shrubby kinds for the Green-houſe.*

Compriſes three ſhrubby ſpecies, exotics from warm countries, as mentioned in their titles, and require ſhelter here in winter, ſo muſt be kept in pots and placed among the green-houſe plants.

[8]SCABIOSA *Cretica.*

*Cretan Shrubby Scabious.*] Riſes with a ſhrubby ſtem, branching two or three feet high; long, ſpear-ſhaped, whitiſh, entire leaves, numerouſly in cluſters, and the branches terminated by fine blue flowers, having quinquefid florets.

*Variety.*] Auricula-leaved.

[9]SCABIOSA *Africana.*

*African Shrubby Scabious.*] Riſes with a ſhrubby ſtem, branching four or five feet high; oval-ſpear-ſhaped cut leaves, and the branches terminated by fleſh-coloured flowers, having quinquefid florets.

*Varieties.*] Rough crenated-leaved—Finely cut-leaved—Woolly-leaved.

[10]SCABIOSA *Rigida.*

*Rigid or Stiff-leaved Shrubby Æthiopian Scabious.*] Riſes with a ſhrubby ſtem, branching two or three feet high; ſpear-ſhaped, ſerrated, ſtiff, ſhining leaves, and the branches terminated by whitiſh flowers, having quadrifid, nearly-radiated florets, and obtuſe calicinal ſcales.

All the above ſpecies of *Scabioſa* flower commonly in June, July, and Auguſt, and ſome continue in ſucceſſion till autumn, generally producing the flowers upon long foot-ſtalks ſingly, each flower being an aggregate of ſeveral ſmall quadrifid or quinquefid florets, placed all within one common calix, forming together a moderately large flower, which, in ſome ſpecies, are prodigiouſly numerous, and very ornamental, particularly the two annual kinds; and which two ſorts furniſh plenty of ſeeds in autumn, likewiſe moſt of the other ſpecies.

The merit of theſe plants is, ſome for ornament others for variety.

The two annual kinds, in particular, producing abundance of ornamental flowers, very conſpicuouſly, two or three months in ſummer, are choice furniture for all the common flower compartments, and merit culture in every garden; being raiſed annually from ſeed in ſpring and ſummer, in the open ground, and thence planted out to remain to flower, which, in thoſe of the ſpring ſowing, will be effected the ſame year, but thoſe raiſed in ſummer do not flower till the ſummer following.

The herbaceous perennial kinds may be introduced in the compartments of large gardens for variety.

And the ſhrubby kinds, being potted and placed among the green-houſe exotics, they will effect a good variety, and flower ornamentally in ſummer.

*Propagation and Culture of all the Sorts.*

Firſt, the Annual and Biennial Sorts.—The two firſt ſpecies, being hardy annuals and biennials, may be raiſed plentifully from ſeed annually, in a bed or border of common earth, and, as formerly noticed, may be conſidered both as annuals and biennials, and may be treated accordingly, more particularly the *Scabioſa Atropurpurea* and varieties; obſerving, that if intended to raiſe them as annuals, for flowering the ſame year, they ſhould be ſowed in the ſpring, about March, on a warm border, or, to bring them as forward as poſſible may ſow them in a hot-bed; and being planted out about the borders, in May or beginning of June, they flower the ſame year in July or Auguſt, though not near ſo ſtrong as plants raiſed the year before as biennials: therefore, in order to have ſtrong flowering plants, it is moſt eligible to ſow a principal ſhare in June, to encreaſe in growth all ſummer without running up to ſtalks, and ſtand the winter, for flowering early next ſummer, in which they will produce much ſtronger ſtems, branching more numerous and ſtrong, and produce a greater number of flowers: however, it may be proper to ſow both in ſpring for flowering the ſame year, and in June for next year's flowering; but it is more particularly proper to ſow ſome of the Starry Scabious in ſpring as annuals.

Obſerve,

Obſerve, in ſowing theſe two annual ſorts, that the firſt ſort in particular may be ſowed for tranſplantation, chuſing a bed of light moiſt earth; ſow the ſeed evenly and rake it in; and when the plants are two or three inches high, prick out ſome of the ſtrongeſt, in moiſt weather, where they are to remain to flower, eſpecially the ſpring-ſowed plants; but thoſe deſigned for next year's flowering ſhould be planted in nurſery-beds, in rows ſix or eight inches aſunder, giving neceſſary waterings and weeding, and they will grow fine large plants by autumn, when, or in the following ſpring, tranſplant them with balls of earth to the places where they are to flower.

But the Starry Scabious may either be ſowed in ſpring for tranſplantation, or in patches about the borders, to remain where ſowed, to flower.

Perennial Sorts.—The five hardy, herbaceous, perennial Scabiouſes, are all very eaſily propagated, both by ſeeds ſowed in any bed or border of common earth in the ſpring, and the ſeedlings planted out where they are to remain, and by parting the roots in autumn.

Shrubby kinds.—All the three ſhrubby ſorts are expeditiouſly propagated by planting ſlips or cuttings of the branches in ſpring or ſummer; if in ſpring, plant them in pots, and place them either in a hot-bed or under ſhelter of glaſſes; but in ſummer they may be planted in the full ground, ſhaded and watered; and in either method they will root tolerably well the ſame year, and towards autumn may be potted off ſeparately, and managed as other ſhrubby exotics of the green-houſe.

SCANDIX, Shepherd's Needle, Garden Chervil, &c.

This genus is compoſed of herbaceous annuals and a perennial, for the kitchen-garden and for variety, riſing with finely-divided leaves, and erect ſtalks from one to four or five feet, terminated by umbels of flowers.

Claſs and order. *Pentandria Digynia.*

*Character.*] CALIX, umbellate flower; the general umbel long, and compoſed of a few rays, and the partial umbels of many, and the ſmaller umbellæ only have a five-leaved involucrum—COROLLA, a deformed, radiated, general umbel, having both hermaphrodite and female florets, compoſed of five heart-ſhaped petals.—STAMINA, five ſlender filaments with roundiſh antheræ.—PISTILLUM, an oblong germen, two permanent ſtyles and obtuſe ſtigmas—PERICARPIUM, none, a long two-parted fruit, having two awl-ſhaped furrowed ſeeds.

There are ſeven or eight ſpecies, one of which only is common to the Engliſh gardens, known by the name of Garden Chervil, a fine aromatic, eſteemed as a ſallad and ſoup herb. There is alſo a perennial ſort ſometimes cultivated for variety.

[1]SCANDIX *Cerefolium.* (*Annual*)

*Cerefolium, or Garden Chervil.*] Hath a fibrated annual root, crowned with many finely-divided leaves, of an aromatic flavour, and upright ſtalks, one or two feet high, terminated by umbels of white flowers, with lateral umbels ſitting cloſe, ſucceeded by oval, awl-ſhaped, ſhining ſeeds.

This is an annual plant, but remains in leaf all winter, and is cultivated as a culinary herb for winter and ſpring ſervice; it may alſo be continued for uſe the year round, by ſowing ſeveral times from February till September, becauſe the ſpring and ſummer ſowing run up to ſeed the ſame year, but the autumn ſowing will remain green until ſpring before it runs.

[2]SCANDIX *Odorata.* (*Perennial.*)

*Odoriferous, Great, Perennial Chervil, or Sweet-fern.*] Hath a thick, fibrated, perennial root, of a ſweet aromatic taſte, crowned with large divided leaves, reſembling fern, and upright hollow ſtalks, four or five feet high, terminated by large umbels of white, very fragrant flowers, ſucceeded by long, angular, furrowed ſeeds.

Theſe plants are both very hardy; the firſt is an annual, and the other a perennial. The annual ſort is in eſtimation both for ſallads and ſoups, as before obſerved, and the leaves are the uſeful part; the young leaves of the ſecond were alſo ſometimes uſed formerly, but rarely now, ſo is only retained in ſome gardens to encreaſe the variety in the pleaſure ground, and the annual ſort for the kitchen-garden only, which will grow in any ſoil and ſituation.

They run up to ſtalk in ſpring, flower in May or June, and the ſeeds ripen in July.

As to the culture of the *Cerefolium*, or Garden Chervil, it is by ſeed annually, obſerving, if it is required moſt part of the year, the ſowing ſhould be continued every month till Auguſt or September, as before hinted; but if required only for winter and early ſpring uſe, an autumn ſowing in Auguſt or begin-

beginning of September, will be ſufficient, and the plants coming up ſoon after remain uſeful from October till March or April. The ſeed may be ſowed any where, either broad-caſt and raked in, or in ſhallow drills ſix or eight inches aſunder; and in either caſe the plants are to remain where ſowed, being careful to give occaſional weeding, which is all the culture they require, and they will ſoon be fit to cut for uſe.

The ſecond may alſo be raiſed from ſeed, and plant out ſome of the plants about the large compartments, and when once thus raiſed they will remain ſeveral years, and from its ſcattered ſeeds many young plants will riſe in the adjacent ground.

SCHINUS, Indian Maſtic tree.

It conſiſts of two ſhrubby ever-green exotics for the green-houſe and ſtove, riſing eight or ten feet high, adorned with pinnated many-lobed leaves, and the branches terminated by bunches of pentapetalous flowers.

Claſs and order. *Dioecia Decandria.*

*Characters.*] CALIX, dioecious flowers, having monophyllous, acutely five-parted cups, that of the females being permanent. —COROLLA, five oval petals in the males, and five oblong ones in the female flowers; thoſe in both ſexes being petiolated.—STAMINA, ten filiforme ſpreading ſegments, having roundiſh antheræ.——PISTILLUM, a roundiſh germen, no ſtyle, but three oval ſtigmas.—PERICARPIUM, a globular trilocular capſule, having three ſeeds.

There are only two ſpecies, which being natives of Peru, and other parts of the Indies, require ſhelter of a good green-houſe here in winter, ſo muſt always be kept in pots.

[1]SCHINUS *Molle.*

*Molle-tree of Cluſius, or Peruvian Maſtic-tree.*] Riſes with a woody ſtem, branching numerouſly eight or ten feet high, with pinnated leaves of ten or twelve pair of ſawed lobes and an odd one, which is much the longeſt; and the branches terminated by looſe bunches of whitiſh flowers.

[2]SCHINUS *Areira.*

*Areira, or Braſilian Maſtic-tree.*] Hath a woody ſtem, branching eight or ten feet high, with pinnated leaves of ten or twelve pair of entire lobes, and an odd one, all of equal length; and at the ſides and ends of the branches ſmall cluſters of whitiſh flowers.

Both theſe ſpecies are ſhrubby, durable in root, and top, and retain their leaves the year round; and being natives of hot countries, require ſhelter here of a good green-houſe in winter; or, if ſheltered in a ſtove, two or three winters whilſt young, it will be an advantage to the plants; however, they both ſucceed tolerably with the culture of common green-houſe exotics. They being pretty ever-greens, with finely pinnated leaves, merit a place in the collection of our tender exotics, in which they will effect a good variety; let them, therefore, be cultivated in pots of rich earth, and placed among the plants of the above department.

They are propagated by ſeed obtained from abroad, alſo by layers and cuttings.

Sow the ſeeds in the ſpring, in pots of rich earth, and plunge them in a hot-bed, managing them as other tender ſeedling exotics.

Layers of the young branches in the ſpring will be well rooted in one year.

And cuttings of the young ſhoots, planted in ſpring, in pots, and plunged in a hot-bed, will readily emit roots in ſix or eight weeks.

SCILLA. Squill, or Sea-Onion, Starry Hyacinth, &c.

This genus comprehends a fine collection of hardy, bulbous-rooted, flowery perennials, for adorning the flower borders, having moſtly very large tunicated and ſolid bulbous roots, crowned with long narrow leaves, and erect flower ſtalks, annually; in ſome ſorts two or three feet high, in others but a foot, and ſome but ſix or eight inches, ornamented at top with pyramidal and conic cluſters of hexapetalous ſtarry flowers.

Claſs and order. *Hexandria Mongynia.*

*Characters.*] CALIX, no cup.—COROLLA, ſix oval petals, ſpreading out like the figure of a ſtar.—STAMINA, ſix awl-ſhaped filaments, crowned with oblong, incumbent antheræ.—PISTILLUM, a roundiſh germen, ſimple ſtyle, and ſingle ſtigma.—PERICARPIUM, a nearly oval, three furrowed, trilocular, trivalved capſule, containing many roundiſh ſeeds.

There are about eight ſpecies, all of the bulbous-rooted tribe, ſeven of which are originally from diſtant countries, as Spain, Portugal, France, &c. and the eighth grows wild in ſome parts of England, &c. and all the ſorts are hardy enough to ſucceed in our gardens in the full ground.

[1]SCILLA *Maritima.*

*Maritime Squill, or Common Sea Onion.*] Hath a large oval tunicated onion-like bulbous root, ſending up long narrow leaves, near half a yard in length, and an upright

right naked ſtalk, two or three feet high, having the upper half adorned with a pyramidal thyrſe of white ſtarry flowers appearing early in ſummer.

*Varieties.*] Red-rooted—White-rooted.

This ſpecies is a maritime plant, inhabiting the ſandy ſea-ſhores of Spain and other warm countries, but the bulbs are ſent here annually for medical uſe, and are planted in many gardens as flowery plants for curioſity.

[2]SCILLA *Lilio-Hyacinthus.*

*Lily Hyacinth.*] Hath a ſquamous, or ſcaly, bulbous, lily-like, yellow root, crowned with oblong lily-like leaves, half a foot long or more, and an upright ſlender ſtalk, about a foot high, terminated by many ſtar-ſhaped blue flowers, appearing in June.

[3]SCILLA *Peruviana.*

*Peruvian Hyacinth, or Hyacinth of Peru.*] Hath a large, oblongiſh, bulbous brown root, ſending up ſeveral carinated ſpreading leaves, ſix or eight inches long, broad at the baſe, decreaſing to a point at top, and upright, thick, ſucculent ſtalks, ſix or eight inches high, terminated by a conical corymbus cluſter of deep-blue ſtarry flowers, appearing in May.

*Variety.*] With white flowers.

[4]SCILLA *Italica.*

*Italian, Blue-ſpiked, Starry Hyacinth.*] Hath a roundiſh, white, bulbous root; longiſh leaves with obtuſe points, and erect ſtalks, eight or ten inches high, terminated by a hemiſpherical corymbus of pale-blue flowers, appear in April.

[5]SCILLA *Amœna.*

*Fine Byzantine Hyacinth.*] Hath a large, roundiſh, bulbous, purpliſh root, ſending up ſeveral narrow, carinated, ſpreading leaves a foot long, and upright purpliſh ſtalks eight or ten inches high, ornamented upward with fine ſky-blue ſomewhat drooping flowers, riſing laterally in alternate order, appearing in March or April,

[6]SCILLA *Bifolia.*]

*Two-leaved Early Star Hyacinth.*] Hath a ſmall, roundiſh, ſolid, bulbous root, ſending up only two narrow leaves, about ſix inches long, and a ſlender ſtalk half a foot high, terminated by a few, nearly-erect, blue, ſtarry flowers, appearing early in March.

*Variety.*] With white flowers.

[7]SCILLA *Autumnalis.*

*Autumnal Squill, or Engliſh Starry Hyacinth.*] Hath a ſmall, round, white, bulbous root, very ſlender linear leaves, ſix inches long, and upright ſlender ſtalks, half a foot high, adorned at top with a corymbus of ſmall, blue, ſtarry flowers, having naked peduncles, riſing over one another, the length of the flower, appearing early in September. This grows naturally in many parts of England, &c.

All theſe ſpecies of *Scilla* are bulbous perennials, durable in root, but annual in leaves and ſtalks, which riſe immediately from the root: in ſome ſorts the leaves ſpring up in autumn, and remain green all winter, and decay in ſpring, particularly the firſt, third, and laſt ſort, and ſome others: and in ſome the leaves and flower-ſtalks appear at the ſame time. The ſtalks are generally naked or leafleſs, and terminated by the flowers, which conſiſt univerſally of ſix oval petals, ſpreading open, in a ſtar-like manner, with great uniformity and beauty, exhibiting a good ornamental appearance; and in moſt of the ſorts are ſucceeded by ripe ſeeds in autumn, by which all the ſorts may be raiſed; but more expeditiouſly by off-ſets of the roots annually, when the leaves and ſtalks decay.

They being all of hardy temperature, may be employed as flowery plants to adorn the pleaſure ground, diſpoſed either in patches about the borders, &c. or depoſited in beds by themſelves.

Obſerve, they ſhould generally be removed for tranſplantation when their leaves and flower-ſtalks are decayed, when the roots may be taken up, and either planted again directly, where wanted, or kept till autumn, &c. though the autumnal ſort ſhould be planted early, in order that they may blow the ſame year in autumn; planting all the ſorts about three or four inches deep, or in proportion to the ſize of the bulb. See BULBUS.

The bulbs of all the ſorts may be had, moderately cheap, at moſt of the nurſery-grounds and ſeed-ſhops.

### *Method of Propagation, &c.*

The propagation of all the ſorts is by off-ſets of the roots; the firſt ſpecies, however, being a native of ſandy ſea-ſhores, it encreaſes but ſparingly in gardens, but is obtained plentifully from abroad. All the others furniſh plenty of off-ſets, which may be ſeparated every other year, if required, when their leaves, &c. decay, as practiſed for other bulbous roots.

They

They may all be propagated alſo by ſeed, though this is a tedious method, as the ſeedlings are ſeveral years before they blow: they ſhould be ſowed in autumn, in light earth, an inch deep, obſerving, the ſame method of ſowing and culture practiſed for the Common Hyacinths, &c. See HYACINTHUS.

SCORPIURUS, Caterpillar.

The plants of this genus are hardy, herbaceous, trailing annuals, cultivated in the pleaſure ground more as plants of ſingularity than beauty, for the oddity of their caterpillar-like ſeed-pods; they riſing with procumbent ſtalks, garniſhed with oblong ſimple leaves, and papilionaceous flowers, ſucceeded by contorted pods reſembling green caterpillars.

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX, is monophyllous, inflated, and cut into five acute ſegments.—COROLLA, is papilionaceous; the ſtandard, roundiſh, emarginated, ſpreading, and reflexed; the wings are looſe and nearly oval, and a ſemi-lunulated, pointed, erect keel, two-parted below.—STAMINA, ten diadelphous filaments, with ſmall antheræ.—PISTILLUM, an oblong taper germen, a riſing inflexed ſtyle, terminated by a punctura or point.—PERICARPIUM, an oblong, coriaceous, revoluted, rough pod, of many tranſverſe cells, each containing one ſeed.

There are four ſpecies, natives moſtly of the ſouth of Europe, but grow freely here, in our gardens, in the open borders.

The ſpecies are,

[1]SCORPIURUS *Vermiculata.*

*Common, Vermiculated, Uniflorous Caterpillar.*] Riſes with trailing herbaceous ſtalks, a foot or more long, garniſhed with oblong ſpatula-ſhaped leaves; and at the axillas long pedunculi, each ſupporting one papilionaceous yellow flower, ſucceeded by oblong twiſted pods, covered on every ſide with obtuſe ſcales.

[2]SCORPIURUS *Muricatæ.*

*Muricated Biflorous Caterpillar.*] Riſes with thick- trailing, herbaceous ſtalks, a foot and half long, garniſhed with oblong, broad, obtuſe leaves, and at their axillas long pedunculi, each ſuſtaining two papilionaceous yellow flowers, ſucceeded by oblong, very twiſted, rough pods, having the outſide armed with obtuſe oculi.

[3]SCORPIURUS *Sulcata.*

*Sulcated Triflorous Caterpillar.*] Riſes with ſlender, trailing, herbaceous ſtalks, a foot long, oblong obtuſe leaves, and each pedunclе ſupporting three yellow flowers, ſucceeded by ſlender moderately-twiſted pods, armed on the outſide with acute diſtinct ſpines.

[4]SCORPIURUS *Subvilloſa.*

*Subvilloſe Quadriflorous Caterpillar.*] Riſes with trailing herbaceous ſtalks, a foot and half long, oblong obtuſe leaves, and long pedunculi, each ſuſtaining four yellow flowers, ſucceeded by oblong, ſlender, very contorted pods, armed on the outſide with ſharp ſpines in cluſters.

All theſe four ſpecies of *Scorpiurus* are hardy herbaceous annuals, that riſe from ſeed annually in the ſpring; are all of trailing growth, extending their ſtalks along upon the ground, having one leaf at each joint, and at the wings of the leaves ariſe the flowers, being univerſally papilionaceous, appearing in June and July, and are ſucceeded by oblong pods, variouſly contorted and ſtained, ſo as to bear a very great reſemblance to large caterpillars, apparently feeding on the plants, effecting a curious ſingularity, thoſe of the firſt ſort in particular, which are the largeſt, moſt conſpicuous, and caterpillar-like; however, all the ſorts form an agreeable variety, and they all furniſh plenty of ripe ſeeds in autumn.

Theſe plants, therefore, merit a place in the collection of hardy annuals, principally for the ſingularity of their caterpillar-like ſeed-pods, and being diſpoſed in patches about the borders they will exhibit an eligible variety.

They are propagated by ſeed in the ſpring, which ſucceeds in the full ground, and ſhould generally be ſowed in patches about the borders, where the plants are deſigned to remain, as they do not ſucceed ſo well by tranſplantation; therefore, form ſmall patches in the different compartments, ſowing ſeveral ſeeds in each patch, half an inch deep; and when the plants are come up an inch or two high, thin them to two or three in each place, and clear out weeds, which is all the culture they require, and they will flower in June, and exhibit their pods abundantly all the latter part of ſummer.

SCORZONERA, Viper's Graſs, but commonly called *Scorzonera.*

The plants are herbaceous perennials, biennials, and annuals, moſtly of the carrot-rooted kind, one of which, in particular, producing large eatable roots, is cultivated as a kitchen-garden eſculent: they riſe moſtly with

with long, narrow, graſſy leaves from the root, and erect tall ſtalks, ſurmounted by large compound flowers.

Claſs and order. *Syngeneſia Polygamia Æqualis.*

*Characters.*] CALIX, a long, imbricated, nearly-cylindric, general cup, containing many florets.—COROLLA, many, tongue-ſhaped, quinquedented, imbricated, hermaphrodite florets, the outer ones being the longeſt.—STAMINA, five ſhort filaments, having cylindric antheræ.—PISTILLUM, an oblong germen, filiforme ſtyle, and two reflexed ſtigmas.—PERICARPIUM, none, a ſingle oblong ſeed in each floret, ſitting on the receptacle within the connivent calix.

There are ſeveral ſpecies, but of which there is only one cultivated for uſe, as an eſculent and medical plant; the others having but little merit their culture is not attended to, except in ſome curious botanic gardens merely for variety.

The cultivated ſort therefore is,

SCORZONERA *Hiſpanica.*

*Spaniſh Viper's Graſs, or Common Scorzonera.*] Hath a long, downright, carrot-ſhaped eatable root, covered with a brown ſkin, but white and milky within, crowned with ſeveral long, narrow, entire, ſlightly-ſawed leaves, terminating in a long acute point; and when it ſhoots for ſeed, runs up with an erect, robuſt, branchy ſtem, a yard or more high, garniſhed with amplexicaulous leaves, like the lower ones, and all the branches terminated by large, compound, bright-yellow flowers.

The root is the uſeful part, being in perfection in autumn and winter, and is boiled and eaten like carrots, &c. and is by many greatly eſteemed.

This ſpecies, though of a perennial nature in the root, yet, for general uſe, it ſhould be commonly treated as an annual or biennial; for, being raiſed from ſeed in the ſpring, the roots will be fit for uſe in the following autumn, and remain in perfection till next ſpring, when they will ſhoot up ſtalks for flower and ſeed, and become hard, ſticky, and unfit for uſe, ſo ſhould be thrown away, and a freſh ſupply raiſed from ſeed.

The general propagation of this plant is by ſeed annually, in any open light ſpot of ground, ſowed the latter end of March or beginning of April, not earlier, leſt the plants fly up to ſeed the ſame year, before the roots acquire perfection: having, therefore, made choice of an open ſpot of ground in the kitchen-garden, and at the proper ſeaſon digged it one good ſpade deep at leaſt, then let the ſeed be ſowed either broad-caſt, all over the ſurface, thinly, and raked in, or may draw ſhallow drills, ten or twelve inches aſunder, and ſow the ſeeds therein, and rake the mould evenly over them half an inch thick; in either method the plants will riſe in two or three weeks; obſerving, when they are a little advanced in growth, let them be thinned and cleaned from weeds, by hoeing them in dry weather, cutting out the plants to eight or ten inches diſtance, and cutting away all weeds between them; thus they will grow freely, and their roots continue encreaſing in ſize till September, when they will have acquired their full ſize, diſcoverable by their leaves beginning to decay; at which token of maturity, may begin to draw them for uſe.

The roots may either remain in the ground, and drawn as they are wanted, or may be taken wholly up in autumn, when their leaves decay, and preſerved in ſand all winter, that they may be ready at all times, eſpecially in froſty weather, when they cannot be dug out of the ground.

To ſave ſeed of this ſpecies, let ſome of the plants remain where ſowed, when they will ſhoot up in the ſpring, and produce plenty of ſeed in autumn.

SEDUM, Leſſer Houſe-leek, Orpine, and Stone-crop.

This genus is compoſed principally of hardy herbaceous ſucculents for variety, riſing with annual ſtalks, ſome erect, a foot or two high, ſome but a few inches, and ſome are of trailing growth; adorned with fleſhy leaves, and terminated with bunches of pentapetalous flowers.

Claſs and order, *Decandria Pentagynia.*

*Characters.*] CALIX, is erect, acute, five-parted, and permanent.—COROLLA, five, ſpear-ſhaped, plane, ſpreading petals, and five nectariums, formed each of one emarginated ſcale, inſerted in the outſide of the germen.—STAMINA, ten awl-ſhaped filaments, having roundiſh antheræ.—PISTILLUM, five oblong germens, terminating in ſlender ſtyles, crowned by obtuſe ſtigmas.—PERICARPIUM, five acuminated ſpreading capſules, opening longitudinally, and are filled with many ſmall ſeeds.

There are many ſpecies of *Sedum*, conſiſting of herbaceous perennials and annuals, inhabitants moſtly of dry ſterile places, as hills,

rocks, and tops of walls and buildings; and a few of the perennials only are retained in gardens for variety, and ſome as medical plants, moſt of which are ſucculent both in ſtalk and leaves; ſome riſing with erect ſtalks half a yard high, others not ſix inches, and ſome trail along the ground, as above hinted, and are moſtly deciduous plants, one ſpecies only being evergreen.

The moſt noted ſpecies are,

[1]SEDUM *Telephium.*

*Telephium, Common Orpine, or Livelong.*] Hath a perennial root, compoſed of many knobbed tubercles, ſending up erect, round, ſucculent ſtalks, branching half a yard or two feet high, garniſhed with oblong, plane, ſerrated, ſucculent leaves, and the ſtalks terminated by a leafy corymbus of flowers, of different colours in the varieties.

*Varieties.*] Purple-flowered Orpine—— White-flowered—Broad-leaved.

This ſpecies is an inhabitant of woods and dry places in England, &c. but has been long a reſident of gardens for variety and medical uſe: conſidered as a medicinal plant, it has great virtue in eaſing pains both of green wounds and old ſores, the leaves being peeled or bruiſed, and applied to the part affected; and it is ſaid they will alſo cure corns.

There is a ſingularity in this plant, that the ſtalks being cut in ſummer, and faſtened upright in a room, they, by their ſucculency, will continue ſhooting a long time, only by ſprinkling them with water once a week.

[2]SEDUM *Anacampſeros.*

*Anacampſeros, or Decumbent Evergreen Italian Orpine.*] Hath a fibrous perennial root, decumbent or trailing ſtalks, wedge-ſhaped entire leaves, and the ſtalks terminated by a corymbus of purple flowers.

[3]SEDUM *Rupeſtre.*

*Rock Sedum, or Stone-crop of St. Vincent's Rock.*] Hath ſlender, trailing, purple ſtalks; ſhort, thick, awl-ſhaped, ſucculent, glaucous leaves in cluſters, quinquefariouſly imbricated round the ſtalks, and the ſtalks terminated by roundiſh cymoſe bunches of bright yellow flowers.

It grows naturally on St. Vincent's Rock near Briſtol, and other rocky places in Europe.

[4]SEDUM *Aizoon.*

*Aizoon, or Siberian Yellow Orpine.*] Hath a tuberculated, fibrous, perennial root; many upright, round, ſucculent ſtalks, a foot high; lanceolate, plane, ſerrated, thickiſh leaves; and the ſtalks terminated by a cloſe-ſitting cymoſe cluſter of bright yellow flowers.

[5]SEDUM *Reflexum.*

*Reflexed, Small Yellow Sedum, or Prick Madam.*] Hath a ſlender, fibrous, perennial root; ſmall trailing ſucculent ſtalks, garniſhed with thick, awl-ſhaped, ſucculent leaves ſparſedly, the lower ones recurved, and the ſtalks terminated by reflexed ſpikes of bright yellow flowers.

It grows naturally on old walls and buildings in England, &c.

[6]SEDUM *Acre.*

*Acrid Sedum, Common Stone-crop of the Wall, or Wall Pepper.*] Hath ſmall fibrey roots, very ſlender ſucculent ſtalks, four or five inches high, very ſmall, ſub-oval, gibbous, erect, alternate leaves, cloſe together; and the ſtalks terminated by trifid-cymoſe bunches of ſmall yellow flowers.

This ſort grows abundantly on rocks, old walls, and tops of buildings, almoſt every where, which often appear covered with the flowers in ſummer: it merits culture in pots of rubbiſhy earth, and in patches in dry ſtony banks, and in rock-work, or on tops of walls, &c. where it will encreaſe into large tufts, and exhibit a pretty variety when in flower.

Its leaves, &c. are of an acrid biting quality.

[7]SEDUM *Sexangularis.*

*Sexangular Stone-crop.*] Hath a fibrey perennial root; thick, ſhort, ſucculent ſtalks; ſmall, ſub-oval, gibbous, erect leaves cloſe together, arranged ſix ways imbricatim, and the ſtalks terminated by bunches of yellow flowers.

It grows on rocky and other dry places in England, &c.

[8]SEDUM *Album.*

*White Stone-crop.*] Hath fibrey perennial roots; trailing ſlender ſtalks, ſix or eight inches long; oblong, obtuſe, ſeſſile, ſpreading leaves; and the ſtalks terminated by branchy cymoſe bunches of white flowers.

This grows on old walls, rocks, and buildings in England, &c.

[9]SEDUM *Hiſpanicum.*

*Spaniſh Sedum.*] Hath fibrous perennial roots, crowned with cluſters of taper, acute, ſucculent leaves; ſlender ſucculent ſtalks, four or five inches high, garniſhed alſo with taper leaves, and terminated by downy cymoſe cluſters of white flowers.

All

All theſe ſpecies of *Sedum* are hardy, herbaceous, ſucculent perennials, durable in root, but moſtly annual in ſtalk, &c. which, riſing in ſpring, flower in June, July, and Auguſt, in different ſorts; the flowers conſiſting univerſally of five ſpreading petals, generally crowning the ſtalks numerouſly in corymbus and cymoſe bunches and ſpikes, appearing tolerably conſpicuous, and are ſucceeded by plenty of ſeeds in autumn, by which they may be propagated, alſo abundantly by parting the roots, and by ſlips or cuttings of the ſtalks in ſummer; in all of which methods they readily grow and ſpread very faſt into tufted bunches.

They being all of ſucculent growth, they conſequently delight moſt in dry ſoils, or in any dry rubbiſhy earth, and moſt of them will grow upon rocks and buildings.

Theſe plants merit culture for variety, but particularly the firſt five or ſix ſorts, and the firſt ſort alſo as a medicinal plant, indulging them generally with a light dry ſoil, as they are commonly the moſt durable in any dry rubbiſhy earth, either in the full ground or in pots, alſo in rocks, ruins, and the tops of buildings, with only a ſmall portion of ſoil at firſt to root in.

They may therefore be diſpoſed for variety, ſome in any dry or rubbiſhy bank or border, and ſome in pots of dry ſoil, to move to different compartments occaſionally; in both caſes, planting either ſlips of the root in the ſpring or autumn, or ſlips or cuttings of the young ſhoots in ſpring or ſummer, they will all readily grow and encreaſe faſt enough; the common Orpines will alſo ſucceed in any common dry ſoil in any of the borders.

They may likewiſe be employed as rock-plants to embelliſh rock-work, ruins, and the like places, either planting the roots, or cuttings of the ſhoots, in a little mud, or any moiſt ſoil at firſt, and place it in the crevices, &c. they will ſoon root and fix themſelves, and ſpread about very agreeably; and all the Stone-crop kinds in particular may may be made to occupy the tops of walls and buildings, by planting them as aboveſaid in a little mud or moiſt earth, previouſly placed on the wall, &c. they will readily root and eſtabliſh themſelves without farther care.

*Method of Propagation for all the Sorts.*

All the ſorts are eaſily propagated by ſlipping the roots, at almoſt any time of the year; likewiſe by ſlips or cuttings of their ſhoots in ſpring and ſummer, more particularly all the Orpine kinds; but cuttings of all the ſorts will very readily grow; and as to the Stone-crop kinds, ſhoots of them may be eaſily ſlipped in ſpring and ſummer with roots to their bottom; the ſame may alſo be often practiſed to moſt of the other ſpecies: obſerving, in all the methods of propagation, the ſlips and cuttings may either be planted in the nurſery way till well rooted, or planted at once where they are to remain, in the places and manner before mentioned.

They may alſo be propagated by ſeeds ſowed in any dry ſoil, or in the crevices of buildings, &c.

SEMEN, the Seed, being the eſſence of the fruit of every vegetable, containing the future plant in miniature, and conſiſts of the following eſſential parts.

*Corculum, or Punctum Vitæ* The little heart, the point of life, or embryo of the future vegetable, being the ſmall point or ſpeck, placed in the center of the Seed, between the cotyledons or lobes, and attached thereto, and is diſtinctly viſible in the bean and moſt other leguminous ſeeds: conſiſts of two parts, the *roſtellum* and *plumula*, the former being the radical or deſcending part that ſtrikes downwards, and becomes the root, the other is the aſcending part, that ſhoots upward and become the ſtem and branches, &c.

*Cotyledon or Side Lobes.* Being the ſide periſhable lobes of the Seed, which involve, and for ſome time nouriſhes the *corculum* or embryo plant: theſe lobes are generally two in number, very conſpicuous in the bean and other ſeeds of the leguminous tribe, particularly if they have been previouſly laid in earth or water.

After the Seeds have been committed to the earth, the *corculum* or *punctum vitæ*, begins to germinate, and the cotyledons expand, burſt open the outer cover, and riſes gradually out of the earth in form of leaves, commonly called the Seed-leaves, exhibiting the firſt viſible formation of the infant plant, accompanying it for ſome time after its eruption from the earth, till the firſt proper leaves are formed in the center of the vegetable, and advanced a little in growth, then the lobes or ſeminal leaves becoming uſeleſs, wither and decay.

Moſt plants have two cotyledons or Seed-leaves, (*Dicotyledones*) particularly almoſt all the tribe of fibrous-rooted herbaceous plants,

and all trees and ſhrubs; but ſome have only one cotyledon, (*Monocotyledones*) as in moſt of the bulbous plants of the liliaceous tribe, riſing out of the ground like a ſheath; and ſome ſeeds have no cotyledon at all (*Acotyledones*), ſuch as the ferns, moſſes, flags, and funguſes.

Other parts of the Seed are:

*Ala or Wing*. Many Seeds are winged, or furniſhed with a thin membrane or film, and, by its flying, helps to diſperſe them, as in fir, birch, maple, aſh, elm, hops, and numerous other ſorts.

*Coronulla or Little Crown*. Many Seeds are crowned, and ſome ſurrounded with a pappus, *i. e.* a feathery or hairy down, particularly many of the compound tribe and others, for the purpoſe of diſſemination, being framed for flying like a ſhuttlecock, ſo as to be eaſily tranſported by the wind to very conſiderable diſtances from the parent plant; hawk-weed, grounſel, and dandelion furniſh examples.

But numerous ſorts of Seeds are ſimple, *i. e.* have neither wing nor pappus.

The number, form, ſize, and ſubſtance of Seeds are extremely various in different plants.

In point of number it conſiſts of from one to ſeveral hundred, or even thouſands in each ſeed-veſſel; for ſome plants have only one, ſome two, three, four, or many Seeds, and ſome are of amazing fertility, amounting to many hundreds, as for inſtance, a ſingle Seed-veſſel of tobacco often contains about one thouſand Seeds; that of white poppy, eight thouſand; and the whole produce of one tobacco-plant is upwards of forty thouſand, though ſome have computed the number above three hundred thouſand; and the produce of a ſingle ſtalk of ſpleen-wort is eſtimated at upwards of a million of Seeds.

As to form, Seeds are either round, oval, kidney ſhaped, heart-ſhaped, angular, &c.

With reſpect to ſize, Seeds are of numerous ſizes in different plants, from the large ſize of cocoa nuts down to the minute Seeds of creſſes, moſſes, and others much ſmaller.

And as to ſubſtance, ſome Seeds are ſoft or fleſhy, ſome membranous, and ſome are of a hard bony nature, as in all the nuciferous tribe.

Seeds are covered or naked. Covered Seeds (*Angioſpermia*) are ſuch as are contained in ſome veſſel, either of the capſule, pod, berry, apple, or cherry kind: and naked Seeds (*Gynoſpermia*) are thoſe that are not contained in any veſſel, but lodged in the receptacle, or in the bottom of the calix.

The vaſt variety of ways nature has provided for the diſſemination of ſeeds is truly wonderful; in moſt plants the fruit or veſſels, containing the ſeed, are raiſed above the ground either by erect firm ſtems, or often by climbing ſtalks, ſo that the fruit, being elevated from the ground, it may be more eaſily ſhaken by the wind, which often blows Seeds to a great diſtance; for the ſame reaſon that ſpecies of ſeed-veſſel called a capſule, opens at the top, that the Seeds may be more eaſily diſſeminated. Many Seeds being winged, as before obſerved, are by that means ſpread far and near by the winds; theſe wings conſiſting either of a thin membrane or film, as in the fir, birch, maple, elm, aſh, hops, &c. as formerly hinted; or of a fine feathered or hairy down, beard, or tail, as in moſt of the compound plants, alſo in the ſcabious, valerian, and many others, whereby they are eaſily wafted to a great diſtance to different ſoils and territories. Some ſeed-veſſels are endued with a remarkable elaſticity, by which means they dart their Seed, with an elaſtic force, to ſome conſiderable diſtance, ſuch as touch-me-not, and ſpirting cucumber, &c. Many Seeds and ſeed-veſſels being armed with hooks, hairs, &c. by which they attach themſelves to animals, and are thereby diſperſed, ſuch as in carrot, hemp agrimony, burdock, &c. Likewiſe Seeds of many ſorts, being devoured by birds, they void them entire, often in different parts, at a diſtance, and they grow. Berries, and other pulpy fruit, being eaten as food, the Seeds, or kernels of many ſorts often paſs through unhurt, and falling to the ground often grow. Seeds are alſo often diſſeminated by rivers, torrents, and all running waters and tides, hence often conveyed many hundred leagues from their native ſoil, and caſt upon a very different climate, to which, however, they ſometimes, by degrees, render themſelves familiar.

The duration of Seeds, in reſpect to the retention of their germinative property, is very conſiderable: for inſtance, the cucumber, melon, and gourd, often retain their vegetative power eight, ten, or twelve years; and it is ſaid, the *mimoſa* or ſenſitive plant, will retain the principle of life thirty or forty years; on the other hand, the greater number of ſeeds will not keep good above one or two years, and many will not grow well if.

if more than one year old, and ſome Seeds require to be ſowed ſoon after they are ripe, or they will not grow till the ſecond year; others, unleſs ſowed ſoon after they are gathered, will not grow at all, as is often the caſe with the coffee-berries. It is however obſervable, of almoſt all ſorts of Seeds, that being ſowed the firſt year, they generally riſe ſooner and ſtronger than older Seeds; for which reaſon it is adviſable to chuſe principally new Seeds, not more than one year old, if poſſible, of all ſorts of plants and trees, only a few excepted, ſuch as cucumbers and melons in particular, of which, Seeds of two or three years old, or more, are often preferable, becauſe plants raiſed from new Seed are apt to run vigorouſly to ſtem without producing much fruit.

All Seeds produced in dry capſules, pods, and other dry Seed-veſſels, keep much longer in their ſaid veſſels than if taken out; though it is probable that moſt Seeds will retain their germinative faculty longeſt in the bowels of the earth, when they have been accidentally buried a conſiderable depth out of the reach of the influence of the ſun and air. And it has been obſerved of corn-ſallad in particular, which by accident have been buried three feet deep in the ground thirty years, and the ſoil being turned up that depth to the top, they have growed freely; the ſame has alſo been obſerved of many other Seeds, which by chance have been immerſed in the ground ſeveral feet deep; and in the bottom of wells, vaults, ponds, and ditches, that have not been ſtirred for many years, as may be judged from circumſtances; for when occaſion required the ſoil to be thrown to the top, and expoſed to the ſun and air, many plants have riſen that had not been remembered to have been ſeen thereabouts before, or at leaſt for many years paſt.

Likewiſe moſt ſorts of Seeds, if ſowed too deep, remain inactive, and ſome never grow at all; others, nevertheleſs, preſerve their growing property; and when the ground is again freſh ſtirred, ſuch of the Seeds as happen to be moved nearer the ſurface will often come up, which ſhews the power of the ſun and free air in promoting vegetation in Seeds and plants.

Seeds, therefore, ſhould never be ſowed too deep, and always in proportion to their ſize; from about a quarter, or half an inch deep, for the ſmaller Seeds, to about one or two inches for the middling and large kinds of Seeds. See SOWING OF SEEDS.

The germination or growth of Seeds, after being regularly ſowed or committed to the earth a proper depth, is in ſome ſorts very quick, and others ſlow; as for inſtance, creſſes, muſtard, turnip, and many others, come up in a few days; ſome other ſorts in one, two, or three weeks, as in moſt of the eſculents of the kitchen-garden; and numerous others of the herbaceous tribe, though parſley, and ſome others, often remain inactive a month or ſix weeks, and ſome ſorts lie a year or two in the ground before they germinate. As to the tree and ſhrub Seeds, ſome will riſe in a month or ſix weeks, or leſs time, others require two or three months to vegetate, and ſome ſorts lie a whole year at leaſt before they begin to grow, ſuch as the hawthorn, holly, and moſt other of the very hard bony ſeeded kinds; all of which, both in the herbaceous and woody tribe, is generally hinted in the culture of the reſpective ſorts under their proper genera. See alſo GERMINATIO.

For particulars in regard to the various methods of ſowing of Seeds, ſee SOWING OF SEEDS.

SEMPERVIVUM, Live-ever, or Houſe-leek.

The plants are of the ſucculent tribe, herbaceous and ſhrubby, conſiſting of low, hardy, herbaceous, ever-green perennials, for variety in the pleaſure ground, &c. and medical uſes, and ſhrubby ever-green ſucculents for the green-houſe collection, adorned with roundiſh and oblong, thick, fleſhy, ſucculent leaves all the year, and the ſtalks terminated by bunches of polypetalous flowers.

Claſs and order. *Dodecandria Polygynia.*

*Characters.*] CALIX, is concave, cut into many acute ſegments, and permanent.—— COROLLA, from ſix to ten or twelve oblong, ſpear-ſhaped, acute, concave petals—STAMINA, twelve awl-ſhaped filaments, with roundiſh antheræ.——PISTILLUM, twelve germina, placed circularly, terminating in the like number of ſpreading ſtyles, crowned with acute ſtigmas.—PERICARPIUM, about twelve oblong, compreſſed, circularly-placed capſules, pointed outward and opening on the inſide, filled with many ſmall roundiſh ſeeds.

There are about ſix or ſeven ſpecies, four or five of which are hardy herbaceous plants, and two are ſhrubby ſucculent exotics for the green-houſe.

*Hardy*

*Hardy Horbaceous kinds.*

They are low herbaceous ever greens, with ſucculent leafy heads cloſe to the crown of the root, ſending up flower-ſtalks annually, in ſome a foot high, others not half ſo much; one ſort (*Common Houſe-leek*) grows naturally in England, &c. on buildings, or barren hills, the others in mountainous parts on the continent of Europe, but are all hardy enough to grow here, any where either in the full ground or in pots, or on tops of walls, buildings, or rock-work, &c.

[1]SEMPERVIVUM *Tectorum.*

*Houſe Sempervivum, or Common Houſe-leek.*] Hath a fibrous perennial root, crowned with many ovaliſh, pointed, ciliated, ſucculent leaves, in roundiſh heads, cloſe to the earth, having many ſpreading off-ſets; and upright, round, ſucculent, reddiſh ſtalks a foot high, terminated by reflexed ſpikes of ſpreading red flowers, in July and Auguſt.

This is the Common Houſe-leek, which grows naturally on the tops of buildings and barren hills in England, and moſt countries in Europe; and we may ſee it growing in tufts on the tops of ſheds, and other low buildings, almoſt every where, with hardly any ſoil in which to root, for the off-ſets being planted at firſt in a little lump of any ſoil, and placed on the tiles or thatch of any building or on the coping of a wall, they will readily ſtrike and multiply into large bunches without any culture.

This ſpecies, being of a very cooling quality, is uſed againſt the St. Anthony's fire, ſhingles, burns, ſcalds, and inflammations, &c.

[2]SEMPERVIVUM *Globiferum.*

*Globiferous Siberian Houſe-leek.*] Hath a fibrous root, crowned with numerous, narrow, ciliated, ſucculent leaves in compact globular heads, producing many globular off-ſets; and erect, round, ſucculent ſtalks, ſix or eight inches high, terminated by yellowiſh flowers.

*Variety.*] With Red flowers.

This ſpecies produce numerous ſmall globular off-ſets, which being thruſt off by the larger heads, and falling on the ground, &c. take root freely of themſelves, and become proper plants.

[3]SEMPERVIVUM *Arachnoideum.*

*Arachnoide Alpine Houſe-leek, or Cob-web Sedum.*] Hath fibrous roots, crowned with ſhort, narrow, ſucculent leaves in ſmall heads, having many hair-like threads, interſecting one another from leaf to leaf, reſembling a ſpider's web; and erect, round, ſucculent ſtalks, ſix inches high, terminated by ſpikes of bright red flowers ranged moſtly along one ſide.

[4]SEMPERVIVUM *Montanum.*

*Mountain Helvetian Houſe-leek.*] Hath fibrous roots, crowned with oblongiſh, pointed, ciliated, ſucculent, ſmooth leaves, in expanded open heads, producing very ſpreading off-ſets; and erect ſucculent ſtalks, eight or ten inches high, terminated by ſpikes of deep-red flowers.

All theſe herbaceous *Sempervivums* are very hardy ever-green perennials, formed of roundiſh cluſters of ſucculent leaves cloſe to the ground, &c. remaining green all the year, and from the center of the heads of leaves ariſe the flower-ſtalks annually, flowering moſtly in July and Auguſt, ſucceeded by ripe ſeeds in autumn.

They are all hardy enough to grow any where in any dry ſoil or rubbiſhy banks, or in pots, and the tops of buildings, rock-work, &c.

The ſmalleſt off-ſet, being planted at firſt in a ſmall portion of any ſoil, will grow and increaſe ſurpriſingly.

*Tender ſhrubby kinds.*

Theſe conſiſt of two ſhrubby ſucculent exotics, with ſtrong erect ſtems, terminated by heads of numerous ſucculent leaves, and ſpikes of flowers, and being natives of hot countries require ſhelter of a green-houſe here in winter.

[5]SEMPERVIVUM *Arboreum.*

*Tree Houſe-leek.*] Riſes with an upright, thick, fleſhy, tree-like, ſmooth, branching ſtem, ſix or eight feet high, with the branches terminated by large cluſtering heads of ſpear-ſhaped, bright-green leaves; and, from the center of the heads, large pyramidal ſpikes of bright yellow flowers, in autumn and winter.

*Varieties.*] Variegated-leaved Tree Houſe-leek, which is a very curious variety of a fine ornamental appearance — White-flowered. Both the varieties flower very ornamentally, and the flowers continue long in beauty.

It is a native of Portugal, Crete, and the Cape of Good Hope.

[6]SEMPERVIVUM *Canarienſe.*

*Canary Shrubby Houſe-leek.*] Riſes with an upright, ſucculent, rugged ſtalk, half a yard or more high, appearing ragged with the rudiments

diments of paſt foliage, having the top crowned by large globular heads of retuſe ſucculent leaves; and from the center of the head a long pyramidal ſpike of greeniſh flowers, in June and July.

All the above ſix ſpecies of *Sempervivum* retain their leaves the year round, which, in all the ſorts, are thick, fleſhy, and ſucculent, and generally collected many together into round heads; and from the center of the heads ariſe the peduncle or flower-ſtalk, terminated by the flowers in ſummer and autumn, each flower compoſed of from about eight or ten to twelve petals, ſpreading out every way in a ſtar-like manner, exhibiting a good ornamental appearance, and are ſucceded by ripe ſeeds in autumn.

All the ſorts being of a very ſucculent nature, are the moſt proſperous and durable in the drieſt light ſoils; and the hardy ſorts, in particular, thrive on the tops of walls, buildings, and rock-work.

The four hardy ſorts ſucceed any where, in the open air, all the year, and may be planted for variety in any dry rubbiſhy bank, or in pots of the like ſoil; alſo upon rock-work, the tops of walls, and buildings; for as they increaſe exceedingly by off-ſets on every ſide, and theſe being ſlipped off at almoſt any time, and planted in a little ſtiff mud or ſtrong earth, placed on any building, &c. they will grow freely, and ſoon multiply into large bunches, as may be obſerved of the Common Houſe-leek.

The two tender ſhrubby ſorts, requiring ſhelter in winter, muſt be kept in pots of light ſandy earth, or any dry rubbiſhy ſoil, and placed among the green-houſe plants, where they will exhibit a conſpicuous variety at all times of the year; but more eminently the *Sempervivum Arboreum* and variety, managing them as other ſucculents of the green-houſe collection, being particularly careful to water them but ſparingly in the winter, as too much moiſture is deſtructive of tender ſucculents in that ſeaſon. See GREEN-HOUSE PLANTS.

*Method of Propagation, &c.*

All the four hardy *Sempervivums* are very expeditiouſly propagated by their off-ſet heads, which may be readily ſlipped off with roots, or even without any they will ſucceed; planting them in any light dry ſoil, or rubbiſh, as before obſerved; and if on buildings or rock-work, &c. lay a little mud or ſtiff ſoil thereon in patches, in which plant the ſlips, and they will grow and flouriſh without farther trouble.

The two green-houſe kinds are propagated by cuttings of the branches and by ſeed.

By Cuttings.—The firſt of theſe two ſorts in particular is eaſily propagated by cuttings of the ſmaller branches, any time from April or May till July, either with or without the aid of hot-beds, though, if planted early, they may be greatly forwarded by the aſſiſtance of artificial heat; however, in any of the ſummer months they will readily take root in a bed, or pots of natural earth, in the open air; obſerving, in taking off the cuttings, if they appear very ſucculent in the cut part, it is eligible to lay them in the dry a few days to ſkin over, previous to planting; then either plant them in pots of dry light ſoil, or in a bed of common light earth till rooted; in either method allow them occaſional ſhade from the ſun, and ſometimes moderately watered in very dry weather, eſpecially thoſe in pots; they will thus be well rooted in two or three months, and may then be potted ſeparately in middling pots, and placed among the other green-houſe exotics.

By Seed.—The Canary Houſe-leek, in particular, producing ſeed in tolerable plenty in our gardens, it may be alſo propagated by ſowing the ſeed in autumn, or early in ſpring, in pots of light earth, placing them in a frame to have ſhelter from froſt, but expoſed in mild weather; and as the warm ſeaſon advances the plants will begin to appear, which, when an inch or two high, prick them in ſeparate ſmall pots, and manage them afterwards as other ſucculents of the green-houſe.

SERRATULA, Saw-wort.

It conſiſts principally of tall, hardy, herbaceous, flowery perennials, for ornamenting the pleaſure garden; riſing with annual ſtalks from two to ſeven or eight feet high, adorned with pinnatifid and entire leaves in the different ſpecies, and the ſtalks terminated by ſcaly heads of compound flowers.

Claſs and order. *Syngeneſia Polygamia Æqualis.*

*Characters.*] CALIX, an oblong, imbricated, general cup, compoſed of many ſpear-ſhaped, acute, ſmooth ſcales.—COROLLA, a uniform compound flower, compoſed of many hermaphrodite funnel-ſhaped florets, with an inflexed tube and ventricoſe limb, cut

into five parts.—STAMINA, five ſhort hair-like filaments, with cylindric antheræ.—— PISTILLUM, an oval germen, filiforme ſtyle, and two oblong reflexed ſtigmas.—PERICARPIUM, none, each floret ſucceeded by one oval ſeed crowned with down.

The principal ſpecies, in the Engliſh gardens, are the following, the firſt of which is a native of England, the others of different parts of America, but are all of hardy growth, conſiſting both of fibrous and tuberous-rooted perennials,

[1]SERRATULA *Tinctoria.*

*Tinctturaceous Common Saw-wort.*] Hath a fibrous perennial root, upright annual ſtems, two feet high, lyre-ſhaped pinnatifid leaves, having the terminal lobe the largeſt, and the ſtalks terminated by ſcaly heads of purple and white flowers in the different varieties.

This grows naturally in woods and meadows in England, &c. and is ſometimes cultivated for variety.

[2]SERRATULA *Noveboracenſis.*

*New-York Saw-wort.*] Hath a fibrated perennial root, upright channelled ſtalks, ſeven or eight feet high, oblong, lanceolate, ſerrated, pendulous leaves, downy underneath, and the ſtalks terminated by heads of purple flowers.

[3]SERRATULA *Glauca.*

*Glaucous Maryland Saw-wort.*] Hath a fibrous perennial root, upright, channelled, purple ſtalks, ſix or ſeven feet high, oblong-oval, acuminated, ſawed, glaucous-coloured leaves, and the ſtalks terminated by corymbus bunches of purple flowers, having roundiſh cups.

[4]SERRATULA *Scarioſa.*

*Scarioſe-flowered Virginia Saw-wort, or Tuberous Knap-weed.*] Hath a tuberous perennial root; upright, ſtrong, channelled ſtalks, three or four feet high; ſpear-ſhaped entire leaves; and the ſtalks adorned upward with many purple flowers, riſing laterally on obtuſe peduncles, having alſo rough ſcaly calixes.

[5]SERRATULA *Squarroſa.*

*Squarroſe Virginia Saw-wort, or Tuberous Melancholy Thiſtle.*] Hath a tuberous perennial root, an upright ſtalk, near a yard high, linear, or very narrow ſtiff leaves, and the ſtalk adorned upward with purple flowers, riſing laterally and ſitting almoſt cloſe in ſquarroſe, or rough, ſcaly, acuminated cups.

[6]SERRATULA *Spicata.*

*Spiked Virginia Saw-wort.*] Hath a tuberous perennial root, upright ſingle ſtalks, two or three feet high; linear leaves, ciliated at the baſe; and the ſtalks terminated by long ſpikes of cloſe-ſitting purple flowers, riſing laterally.

[7]SERRATULA *Prælta.*

*Prælatous Peach-leaved Virginia Saw-wort.*] Hath a fibrous root, upright branching ſtalks, four or five feet high, oblong, ſpear-ſhaped, ſerrated, ſpreading leaves, hairy underneath, and the branches terminated by looſe bunches of purple flowers.

All theſe ſpecies of *Serratula* are perennial in root but annual in ſtalk, which, riſing in ſpring, flower in June, July, and Auguſt, in the different ſorts; the flowers are univerſally compound, conſiſting of many tubular florets in large ſcaly calixes, and in moſt of the ſorts are tolerably conſpicuous and ornamental; but thoſe of the American kinds are not always ſucceeded by good ſeeds in our gardens; they, however, multiply faſt enough by the root.

Theſe plants being moſtly of erect tall growth, are proper ornaments for the compartments of large gardens, and to interſperſe in ſhrubberies, and along the verges of woods, walks, &c.

*Method of Propagation.*

They are propagated by parting the roots, and by ſeeds.

By Parting the Roots.—All the ſorts ſend out off-ſets from the root, but the fibrous-rooted kinds the moſt abundantly, and the roots may be ſlipped or divided, either in autumn, when the ſtalks decay, or in ſpring before new ones begin to ſhoot up, though if done early in autumn they will flower much ſtronger the following year.

By Seed.—All the ſorts may alſo be raiſed from ſeeds; but the tuberous ſorts, in particular, not encreaſing very plentifully by roots, they muſt be often raiſed from ſeeds, ſowed in autumn or early in ſpring, in an eaſt border, in ſhallow drills; and when the ſeedlings are two or three inches high, prick ſome of the thickeſt out in nurſery-rows till autumn, then plant the whole finally to remain.

SEXUS *Plantarum*, Sexes of Plants.

The different Sexes of plants, with regard to their being male, female, or hermaphrodite, is determinable by their flowers and fruit only.

All

All plants, from the largeſt tree down to the ſmalleſt moſſes and fungi, and other the moſt minute vegetables, are furniſhed with flowers either viſible or inviſible, or concealed; but in the greater number viſible and conſpicuous: and in either caſe the flowers are the genitals or generative organs of all vegetables, being furniſhed with male, female, and hermaphrodite fructifications, ſometimes on different plants of the ſame genus, and ſometimes both male and female on different parts of the ſame plant; but the greater part of the vegetable kingdom is of the hermaphrodite kind, having both male and female organs (*ſtamina and piſtillum*) all within the ſame flower: all which genital parts, or fructifications in the above different ſexes, being eſſentially neceſſary for the purpoſe of generation, as ſerving the important office of fecundation to impregnate the embryo fruit, and fertilize the ſeed. See GENUS, and FLOS; alſo FOEMINA FLOS, MASCULUS FLOS, HERMAPHRODITUS FLOS, FRUCTIFICATIO, &c.

Every flower, however large or minute, is furniſhed with genitals, *i. e. ſtamina* and *piſtillum*, either in the ſame or in different plants and flowers, &c.

For example:

Male plants are ſuch as produce male-flowers only, which male-flowers are thoſe that are furniſhed only with the *ſtamina*, conſiſting of the filaments and antheræ, being the male genitals, but want the *piſtillum*, or female organs.

Female plants being productive of female flowers only, ſuch as are furniſhed with the *piſtillum*, conſiſting of the germen, ſtyle, and ſtigma, the female fructifications, but want the *ſtamina*, or male genitals.

And hermaphrodite plants are thoſe which produce only hermaphrodite flowers, being ſuch as contain both *ſtamina* and *piſtillum*, the male and female organs, all within the ſame calix and corolla, as prevail in the greater number of the vegetable creation.

Likewiſe obſerve,

Monoecious, or androgynous plants, are ſuch as produce both male and female flowers diſtinct, ſituated on different parts of the ſame vegetable, as in the cucumber, melon, and many other. See the Claſs MONOECIA.

Polygamous plants. Such that bear the ſeveral ſexes of flowers, as hermaphrodite and male and female flowers together. See the Claſs POLYGAMIA.

The exiſtence of the Sexes of plants was greatly diſputed by many of the ancient botaniſts and others; but whoever is ſtill doubtful in that point, will but examine the curious ſtructure of flowers, and make ſome experiments, will ſoon be convinced, that the flowers of all plants are furniſhed with proper generative organs; and that the male genitals, the filaments, and antheræ, being furniſhed with a certain ſubtle powder impregnates therewith the *piſtillum* of the females, and fertilizes the embryo fruit and ſeed in the germen, or ovary; ſo that when the flower fades, the fruit ſwells, and the ſeeds become fertile, as may be experienced in early cucumbers in frames by carrying the antheræ of the male bloſſom and touch the ſtigma of the female flower therewith, ſo as to leave ſome of its golden powder on the ſtigma, or female organ, which infallibly impregnates the germen, or miniature fruit, and it will ſoon viſibly ſwell and increaſe faſt in magnitude, furniſhed alſo with fertile ſeed, which, without being previouſly fecundated by the male duſt, generally prove ſterile, or barren, and if ſowed they would not germinate.

So that if we were to remove all the male flowers of cucumbers, or melons, erroneouſly called falſe-bloſſoms, before they blow, we render the females, or fruit-bloſſoms, abortive.

Likewiſe, if flowers of any ſort were caſtrated, or deprived of the male organs, the filaments and antheræ, before they ripen their impregnating powder of the antheræ, the female parts would become ſterile, or, at leaſt, the fruit would either not ſwell at all, or but very imperfectly, and the ſeeds would remain unfertilized, and if ſowed they would not grow.

For although ſome ſorts of plants may probably by chance produce a ſort of imperfect fruit and ſeeds, without the immediate vicinity of male flowers, the ſame as a hen may lay eggs without the congreſs of a cock, yet for want of being fertilized with the male ſperm, neither will the ſeeds grow, nor the eggs bring forth chickens.

Linnæus, in his definitions of the Sexes of plants, ſays, the calix is the marriage-bed in which the male and female organs conſummate the nuptials of plants, and in which theſe tender organs are cheriſhed and defended from external injuries; and the corolla, or petals, are the curtains cloſely ſurround-

ing the genitals, in order to reſiſt ſtorm, rain, or cold; but when the ſun ſhines bright they expand freely, both to give acceſs to the fecundating duſt and to the ſun's rays, to promote the fecundating faculty of the ſaid powder, in acting with due effect on the ſtigma and ſtyle: for the filaments are the ſpermatic veſſels of the males, by which the juice ſecreted from the plant is carried up to the antheræ in form of a fine powder, which is the pollen, or male duſt, anſwering to the male ſperm of animals, or the roe of fiſhes; for although it is dry, it is more eaſily conveyed by the winds, or air, to the ſtigma, or female organ, where it is moiſtened, thence proceeds to the ſtyle, which is the vagina, or tube through which the effluvia, or male duſt paſſes to the germen, or ovary, and there impregnates the fruit or ſeed, which immediately becomes fertile, and then the petals of the flower withers, and the fruit and ſeed grow faſt to perfection.

Thus we need not wonder, that in the vegetable kingdom ſuch numbers of plants are of the hermaphrodite race, *i. e.* the flowers having both male and female organs within the ſame calix and corolla; though in the animal kingdom there are very few of the hermaphrodite kind, for here one ſex can eaſily go to another, whereas plants are fixed to one ſpot and cannot go from it, ſo that the male and female parts of fructification being within the ſame cover, the ſecundation is more eaſily effected by nature.

Other plants again having the male and female parts in different flowers, have their ſituation on the plants and their genitals ſo wonderfully diſpoſed by nature that the ſecundation is effected by the winds and certain inſects conveying the male duſt from the antheræ to the female organs.

Moſt plants appear the moſt beautiful when in flower; but when the genitals of the flower have performed their natural function, the flower ſoon after fades, and many plants gradually loſe much of their former ſplendor, and numerous ſorts, after flowering and ripening ſeeds, either decay wholly, as in all the annual and biennial tribe, and ſome only die down to the root, as in numerous herbaceous perennials; likewiſe ſome plants and trees, after obtaining a great age and bulk, totally decay, after having once flowed; ſuch as often occurs in the *agave*, or great American aloe, which in this country in particular, after fifty or an hundred years growth before they attain a flowering ſtate, they then expanding in the centre and ſhoot up rapidly, into a ſtalk of prodigious height, for flowering, which continuing in bloom two or three months, and the plants generally decay ſoon after, never ſurviving to flower again: the ſame alſo happens in the *muſa paradiſiaca*, or plantain-tree, which having been in ſome European gardens a hundred years, and after having once flowered, no art can prevent its lofty ſtem from periſhing the year after; and the like alſo often occurs in the *lavatera arborea*, or tree-mallow.

SIDEROXYLON, Iron-Wood.

It conſiſts of ſhrubby ever-green exotics of Africa, retained here in hot-houſes for variety; are adorned with oval leaves, in one ſort large, the other ſmall, and monopetalous wheel-ſhaped flowers.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX, is ſmall monophyllous, five-parted at top, and permanent.—COROLLA, is monopetalous, wheel-ſhaped, and five-parted.—STAMINA, five awl-ſhaped filaments, having oblong incumbent antheræ.—PISTILLUM, a roundiſh germen, awl-ſhaped ſtyle, and ſimple obtuſe ſtigma.—PERICARPIUM, a roundiſh umbilicated unilocular berry, containing one oval unilocular nut.

There are about three ſpecies, one of which is inermous, or without ſpines, the others are ſpinous.

[1]SIDEROXYLON *Inerme.*

*Inermous, or Smooth Æthiopian Sideroxylon*] Riſes with a ſhrubby ſtem, branching irregularly ſix or eight feet high, being inermous, or without ſpines, garniſhed with large, oval, firm, ſmooth, ſhining, green leaves, and flowers at the ſides and ends of the branches.

[2]SIDEROXYLON *Spinoſum.*

*Spinous Malabar Sideroxylon.*] Riſes with a ſhrubby branching ſtem, ſeveral feet high, armed with ſpines, ſmall, oval, firm, ſmooth, perennial leaves, and flowers at the ends of the branches.

The above two plants rarely flower in England.

They being tender exotics from hot countries, muſt be kept always in pots and placed in the ſtove.

[3]SIDEROXYLON *Lycioides.*

*Lycioides, or Canada deciduous Sideroxylon.*] Hath a ſhrubby ſtem and branches, armed with

with ſpines, and garniſhed with ſpear-ſhaped, ſhining green, deciduous leaves.

The wood of theſe ſhrubs being ſo very ſolid, remarkably hard and ponderous, as to ſink in water, they obtained the appellation of Iron-wood.

They are propagated by ſeeds procured from abroad, which, of the two firſt ſorts in particular, muſt be ſowed in ſpring, in pots of rich earth, and plunged in the bark-bed; and when the ſeedlings are come up two or three inches high, pot them off ſeparately, and place them always in the ſtove.

Their propagation may alſo be tried by layers and cuttings, aſſiſted by heat.

SILENE, Viſcous Campion, &c.

The plants are moſtly hardy herbaceous annuals and perennials, ſome of which merit culture, as flowering plants, which are principally of erect growth, with ſtalks about half a yard, or two or three feet high, garniſhed with oblong, oval, and narrow ſimple leaves, and the ſtalks terminated by bunches of ſmall pentapetalous flowers.

Claſs and order, *Decandria Trigynia.*

*Characters.*] CALIX, is monophyllous, quinquedented, and permanent.—COROLLA, five plane, obtuſe, ſometimes bifid petals, with narrow ungues, and a nectarium formed of two denticles in the neck of each petal.—STAMINA, ten awl-ſhaped filaments, alternately inſerted into the ungues of the petals, having oblong antheræ. — PISTILLUM, a cylindric germen, three ſimple ſtyles, crowned by ſtigmas, reflexed contrary to the ſun.—PERICARPIUM, a cylindric trilocular capſule opening five ways at top, and many reniforme ſeeds.

There are many ſpecies, annuals, biennials, and perennials, and of which the following are the moſt noted ſorts.

[1]SILENE *Armeria.* (*Annual.*)

*Armeria, commonly called Lobel's Catch-fly.*] Riſes with erect, branchy, clammy ſtalks, half a yard high, having the upper leaves heart ſhaped, and all the branches terminated by faſtigiated bunches of flowers, of different colours in the varieties.

*Varieties.*] Common red-flowered, —— white flowered,—purple-flowered.——All of which flower in June and July.

[2]SILENE *Quinquevulnera.* (*Annual.*)

*Quinquevulnerous, Viſcous Campion, commonly called Dwarf Lychnis.*] Riſes with upright channelled ſtalks, branching numerouſly twelve or fifteen inches high, oval ſpear-ſhaped, hairy, oppoſite leaves, and all the branches terminated by ſhort ſpikes of purple flowers edged with white, having roundiſh entire petals, ſucceeded by erect fruit alternately: appearing in May, June, and July.

Both the above ſpecies are hardy annual flowers, and have been in eſtimation for adorning the borders in ſummer, being commonly ſowed in ſmall patches in the places where they are to flower.

[3]SILENE *Muſcipula.* (*Biennial.*)

*Muſcipula, or Spaniſh Viſcous Campion.*] Hath a biennial root, an upright, round ſtalk with ſwelling joints, and branching by pairs, a foot and half high; narrow ſpear-ſhaped, ſmooth leaves, ſurrounding the ſtalk in cluſters; and at the axillas, cloſe-ſitting, red-flowers, with bifid petals.

[4]SILENE *Viridiflora.* (*Biennial.*)

*Green-flowered Portugal Campion.*] Hath a biennial root, upright, taper, downy ſtalk, branching alternately a foot or more high; oval, ſpear-ſhaped, downy leaves, and the branches terminated by panicles of whitiſh-green flowers.

[5]SILENE *Nutans.* (*Perennial*)

*Nutant or Nodding Mountain Campion.*] Hath a fibrous perennial root, upright ſtalks, two feet high, ſpear-ſhaped leaves; and from the upper part of the ſtalks, nodding panicles of white flowers arranged, drooping on one ſide, having bifid petals.

[6]SILENE *Bupleuroides.* (*Perennial.*)

*Bupleuroide-leaved Perſian Campion.*] Hath a perennial root crowned with large cluſtered heads of ſpear-ſhaped acute leaves, upright ſtalks a foot and a half high; and oppoſite pedunculi, each ſuſtaining two or three white flowers with bifid petals and ſhort bractea.

[7]SILENE *Fruticoſa.* (*Perennial.*)

*Shrubby Sicilian Viſcous Campion.*] Riſes with a low ſhrubby ſtem, branching a foot or more high, having broad ſpear-ſhaped leaves, trichotomous panicles of greeniſh-white flowers.

All theſe plants flower here in ſummer from May till Auguſt in the different ſorts, each flower having five petals, and ſeveral of the ſorts produce ripe ſeeds, particularly the annuals and biennials, by which all the ſorts may be raiſed, and the perennials alſo by parting the roots, &c.

They are all hardy herbaceous plants, and for the general part have very viſcous or

clammy ſtalks, particularly juſt below the joints, to which flies often ſtick faſt, hence the name Catchfly, and Viſcous Campion, &c.

They will all proſper in any of the garden compartments, and may be employed for ornament and variety in different parts of the pleaſure-garden.

The two annual ſorts, in particular, are cultivated in many gardens as flowery plants, which being raiſed from ſeed may be ſowed in autumn or ſpring, where they are to flower: the autumnal-ſowed plants flower earlier and ſtrongeſt, though it is beſt to ſow at both ſeaſons, repeating alſo the ſowing in ſpring and early part of ſummer, in order to obtain a longer bloom, obſerving to ſow them in patches about the borders; and after the plants come up thin out the weakeſt, leaving only two or three in each patch, and they will then grow ſtrong and flower plentifully in June and July, and ripen abundance of ſeeds in autumn.

The biennial ſorts are raiſed from ſeeds ſowed in autumn or ſpring in a bed or border and raked in, and when the plants are come up an inch or two high, prick them out in nurſery-beds till autumn, then tranſplant them into the borders, &c.

The perennials may be propagated by ſlipping their heads, and parting the roots, and the ſhrubby ſort alſo by ſlips of its branches in a ſhady border.

They may alſo be raiſed from ſeeds like the biennial.

SILPHIUM, Baſtard Chryſanthemum.

The plants are principally tall-growing, herbaceous perennials for ornamenting the pleaſure-ground, riſing with annual ſtalks ſeveral feet high, adorned with divided and entire leaves, and the ſtalks crowned with compound radiated flowers.

Claſs and order. *Syngeneſia Polygamia Neceſſaria.*

*Characters.*] CALIX, is oval, ſcaly, imbricated, and permanent, having the ſcales prominent and reflexed in the middle.—— COROLLA, a compound radiated flower, conſiſting of funnel-ſhaped, barren, hermaphrodite florets in the diſc, and ſpear-ſhaped females in the radius.—STAMINA, five ſmall filaments in the hermaphrodite florets, having cylindric antheræ.—PISTILLUM, in the hermaphrodites a taper germen, long ſlender hairy ſtyle, and ſimple ſtigma; and in the females a heart-ſhaped germen, ſhort ſimple ſtyle, and two briſtly ſtigmas.—PERICARPIUM, none.—SEMEN, no ſeed in the hermaphrodite, but in the females ſingle heart-ſhaped ſeed, having a membranaceous two-horned border.

The ſpecies are,

[1]SILPHIUM *Trifoliatum.*

*Trifoliate Virginian Silphium.*] Hath a fibrated, ligneous, perennial root, upright, firm, purpliſh ſtalks, branching four or five feet high; large, oblong, rough, ſharply-ſerrated leaves, generally by threes or fours round the ſtalk; and at the ſides and ends of the branches long peduncles, each ſuſtaining one radiated yellow flower.

[2]SILPHIUM *Solidaginoides.*

*Solidaginoide Virginian Silphium.*] Hath a fibrated perennial root, upright ſtalks a yard high; ſpear-ſhaped, acute, ſerrated, oppoſite leaves on ſhort foot-ſtalks; and the ſtalks terminated by radiated yellow flowers looſely diſpoſed.

[3]SILPHIUM *Aſteriſcus.*

*Aſteriſcus, American Sylphium.*] Hath a fibrous, perennial root, upright, thick, hiſpid ſtalks three or four feet high; oblong, rough, undivided, cloſe-ſitting leaves, alternate below, but oppoſite above; and the ſtalks terminated by radiated yellow flowers.

[4]SILPHIUM *Laciniatum.*

*Laciniated American Sylphium.*] Hath a fibrous perennial root; upright, very thick, taper, ſimple ſtems, eight or nine feet high; large pinnatifid, ſinuated leaves alternately; and the ſtalks terminated by radiated yellow flowers.

All theſe four ſpecies flower here annually in July and Auguſt, the flowers are univerſally compound and radiated, each flower conſiſting of many florets in one ſcaly, imbricated, general calix, tubular florets in the diſc, and ſpear-ſhaped ones from the radius; but the ſeeds do not ripen freely in England.

They are all very hardy herbaceous perennials, durable in root, but renew their ſtalks annually in ſpring, which flowering in ſummer, decay to the root in autumn.

All the ſorts are proper ornamental furniture for large compartments in aſſemblage with other tall-growing perennials, where they will effect a good variety in ſummer.

They are all eaſily propagated by parting their roots in autumn, planting the ſlips at once where they are to remain, and they will flower the following year.

SINAPIS,

SINAPIS, Muſtard.

The plants are moſtly hardy herbaceous annuals, ſome of which merit culture as eſculent herbs, both for ſallading and for their ſeeds for making muſtard; all of which riſe with erect branchy ſtalks from two to three or four feet high, garniſhed with broad, rough, deeply-jagged leaves, and the branches terminated by ſpiked cluſters of tetrapetalous cruciforme flowers.

Claſs and order. *Tetradynamia, Siliquoſa.*

*Characters.*] CALIX, four narrow, cruciforme, deciduous leaves.—COROLLA, four roundiſh, plane cruciforme petals, and four oval nectari.—STAMINA, four long and two ſhort filaments, having erect patent antheræ. PISTILLUM, a taper germen, a ſtyle the length thereof, crowned with a headed ſtigma.—PERICARPIUM, an oblong, ſwelling, rough, bilocular, bivalvous pod, having many globoſe ſeeds.

The principal ſpecies for general culture are,

[1]SINAPIS *Alba.*

*Common White Muſtard.*] Riſes with large, rough, jagged leaves, upright, branchy, hairy-ſtalks two feet high, or more, garniſhed alſo with jagged rough leaves, and all the branches terminated by looſe ſpikes of numerous yellow flowers, ſucceeded by hiſpid pods, having long oblique beaks, and contain white ſeeds.

This is the common White Muſtard uſually cultivated in gardens as one of the ſmall ſallad-herbs, and may alſo be raiſed for its ſeed to make Muſtard.

[2]SINAPIS *Nigra.*

*Black Muſtard.*] Riſes with erect, branching ſtalks, four feet high or more, garniſhed with large, rough, jagged leaves, and the branches terminated by ſpiked cluſters of yellow flowers, ſucceeded by ſmooth pods, tetragonous at top, containing blackiſh-red ſeeds.

This is the ſort which is commonly cultivated in fields for its ſeed, of which to make the common Muſtard for general uſe.

[3]SINAPIS *Arvenſis.*

*Field Sinapis, or Durham Muſtard.*] Riſes with erect ſtalks two feet high, garniſhed with oblong, rough leaves, and the branches terminated by bunches of yellow flowers, ſucceeded by multangular, ſwelling, turgid pods, with long beaks.

The two firſt ſpecies flower in June and the ſeeds ripen in July and Auguſt, but the third flowers in May and the ſeeds ripen in June.

Theſe three ſpecies of *Sinapis* are hardy herbaceous annuals, that grow naturally in the fields in England, and moſt parts of Europe; but the ſecond and third ſort, in particular, grows abundantly among the corn, and by way-ſides in many parts of England, and are alſo cultivated in gardens and fields in large quantities for their ſeeds for Muſtard; the *Sinapis Alba*, however, is cultivated in gardens principally as a ſallad-herb: and the *Sinapis Nigra*, and the Field *Sinapis* are the chief ſorts that are cultivated for their ſeed to manufacture for Muſtard; but of the ſeed of the third ſpecies in particular is made that ſort called Durham Muſtard; however, good Muſtard may be made of all the three ſorts, all of which being ſowed in the ſpring ſoon come up, ſhoot up to ſtalks, and produce ripe ſeeds in three or four months, then totally periſh; ſo that a freſh ſupply is raiſed annually from ſeed.

The White Muſtard, however, being uſed in gardens as a ſallad-herb, is ſowed along with other ſmall ſallading at all times of the year, even ſometimes every week or oftener, in a bed or border of light earth, ſowed generally in ſhallow drills very thick, covering it very thinly with earth; and in winter, and early in ſpring, during the cold weather, is ſowed alſo in hot-beds; and the herbs are always cut for uſe whilſt in the ſeed-leaf and but a few days old; otherwiſe they will become too ſtrong and rank taſted.

But for the particular methods of raiſing this ſort as a ſallad-herb, together with other ſmall ſallading at different times of the year. See SALLAD-HERBS and SMALL SALLADING.

Obſerve, in order to ſave ſeed of this ſort for garden uſe, ſow it on an open ſpot of ground in March or April, either thinly in drills a foot aſunder, or broad-caſt all over the ſurface, and let the plants run up to ſtalk, and they will furniſh ripe ſeeds in Auguſt.

To raiſe the plants for the ſeed for Muſtard, they ſhould be ſowed in the ſpring, any time in March, in ſome open ſituation either in a kitchen-garden, or in the open fields, where large quantities are required for ſale; in either caſe, having digged or ploughed the ground, then ſow the ſeed broad-caſt all over the ſurface, and rake or harrow them in lightly, or ſow it in ſhallow drills a foot aſunder. They will ſoon come up, obſerving, that when the plants have four or more

leaves

leaves an inch or two broad, thoſe ſowed in the broad-caſt way ſhould be hoed and thinned, leaving them ten or twelve inches aſunder, and cut up all weeds, repeating it once or more if neceſſary; after this the plants will ſoon ſpread and cover the ground, and ſhoot faſt up to ſtalks for flowers and ſeed, which will ripen in July or Auguſt, and the third probably in June, when the ſtalks ſhould be cut or pulled up, and thraſhed out for uſe.

SISIMBRIUM, Water-Creſs.

Conſiſts of hardy herbaceous annuals and perennials, moſtly of the aquatic tribe, one of which is in high eſtimation as a ſallad-herb; are moſtly of ſpreading growth, garniſhed with pinnated and pinnatifid leaves, and the ſtalks terminated by ſpikes of ſmall tetrapetalous cruciforme flowers.

Claſs and order, *Tetradynamia Siliquoſa.*

*Characters.*] CALIX, four linear, ſpear-ſhaped, ſpreading, deciduous leaves.—COROLLA, four oblong, patent, cruciforme petals.—STAMINA, four long and two ſhort filaments, having ſimple antheræ.—PISTILLUM, an oblong, ſlender germen, very ſhort ſtyle, and obtuſe ſtigma.—PERICARPIUM, a long, taper, incurved, bivalvous bilocular pod, having many ſmall ſeeds.

There are more than twenty different ſpecies of this genus, but the greater part being plants of no merit are rarely cultivated: one ſort however, *Common Water-Creſs*, demands attention as a wholeſome ſallad-herb.

SISYMBRIUM *Naſturtium.*

*Naſtartium Aquaticum, or Water-Creſs.*] Hath a fibrous, ſpreading, perennial root, ſtriking deep in the mud under the water, and ſends up ſeveral branchy ſhoots, becoming hollow ſtalks, garniſhed with pinnated leaves of four or five pair of nearly heart-ſhaped lobes, and an odd one, and the branches terminated by looſe ſpikes of ſmall whitiſh flowers, in June, and the ſeeds ripen in July.

This plant is a perennial, grows abundantly in ſhallow ſtanding waters, on the margins of ſmall rivers, brooks, running ſprings, watery ditches, and moiſt meadows, almoſt every where; and being of a fine warm, agreeable, fat reliſh, is greatly eſteemed as a winter and ſpring ſallad herb, and as ſuch every one may obtain it at an eaſy rate, either by gathering it themſelves where it grows naturally, or by purchaſing it of the ſimplers, or herb-people, eſpecially about London, where great quantities are daily brought for ſale in autumn, winter, and ſpring, tied in ſmall bunches, which they retail for a penny or two-pence *per* dozen; and many people buy them conſtantly as a choice, wholeſome, palatable ſallad, to eat either alone, or mixed with other ſallad-herbs.

It is a good purifier of the blood, and is admirable againſt the ſcurvy.

This plant, however, as it grows wild in great plenty almoſt every where in watery places; is rarely cultivated in gardens, though it may be eaſily raiſed abundantly in any ditches of water, ſhallow ponds, and other moiſt places, either by tranſplanting the plants with roots from the places of their growth, or by ſeed.

Its propagation therefore may be effected both by parting the roots and by ſeed.

By parting the Roots.—In ſpring, or any time of the year, whilſt the plants are young, may eaſily ſlip off a quantity, with plenty of roots to each, which plant directly, in ſome ſhallow, watery place, as before obſerved, they will readily ſtrike into the mud, ſpread conſiderably, and will ripen ſeed and ſow themſelves, and furniſh plenty of plants for uſe.

By Seed.—Procure a quantity of the ſeed in ſummer as ſoon as ripe, in the places where the plants grow naturally, and ſow them directly in any moiſt place to remain; or get a quantity of the plants juſt as the ſeeds begin to ripen, and throw them into any ſhallow water, they will ſtrike root, ripen, and ſhed their ſeeds, which falling to the bottom will grow and furniſh plenty of young plants.

SISYRINCHIUM *Bermudiana.*

The plants are low, herbaceous, flowery perennials for the pleaſure-garden, riſing with ſword-ſhaped leaves and ſtalks half a foot high, adorned at top with ſpathaceous hexapetalous flowers.

Claſs and order, *Gynandria Triandria.*

*Characters.*] CALIX, is a ſpatha, or ſheath, formed of two compreſſed, keel-ſhaped leaves.—COROLLA, ſix oblong-oval, acute-pointed, ſpreading petals.—STAMINA, three very ſhort filaments, with bifid antheræ affixed to the ſtyle.—PISTILLUM, an oval germen under the flower, awl-ſhaped ſtyle, and trifid reflexed ſtigma.—PERICARPIUM, an oval, trigonous, trivalved, trilocular capſule, having numerous roundiſh ſeed.

There is but one ſpecies, which, however, comprehends two or three varieties, all of which are fibrous-rooted perennials.

The

The ſpecies is,

SISYRINCHIUM *Bermudiana.*

*Bermudian Siſyrinchium.*] Hath a fibrous perennial root, crowned with ſeveral ſword-ſhaped, two-edged, ſtiff leaves, five or ſix inches long; amidſt them an erect, two-edged ſtalk half a foot high, garniſhed alſo with ſword-ſhaped, amplexicaule leaves, and adorned at top with ſeveral ſpreading deep-blue flowers, having yellow bottoms.

*Variety. Virginian Siſyrinchium.*] Hath a fibrous perennial root, crowned with narrow, ſword-ſhaped leaves, but three or four inches long, and erect two-edged ſtalks the ſame height, terminated by two or three pale-blue flowers.

Both theſe varieties flower in June, and are ſucceeded by ripe ſeeds in autumn.

They may be employed as flowery plants in any of the compartments of the pleaſure-ground, placing them towards the front in aſſemblage with other low perennials, where they will cauſe an agreeable variety.

Their propagation is by parting the roots, and by ſeed.

By parting the Roots.—This may be performed in autumn, any time in September or October, when the roots may be taken entirely up, and ſlipped into ſeveral ſeparate off-ſets, but not too ſmall, planting them again directly, and they will root firmly before winter, and flower the year following.

By Seed.—Sow them in autumn, or early in ſpring in an eaſt border, in ſhallow drills, covering them half an inch deep; they will come up in April or May like graſs, keep them weeded all ſummer, and towards autumn prick out a quantity in nurſery-rows ſix inches aſunder, to ſtand till ſpring, then tranſplanted with balls, to where they are to remain.

SIUM Water-Parſneps and Skirret.

This genus is compoſed of hardy herbaceous perennials, one of which, (Skirret,) having an eſculent root, is ſometimes cultivated in kitchen-gardens, the others being plants of no merit are rarely cultivated; they riſe moſtly with winged leaves and upright annual ſtalks, terminated by umbellate cluſters of flowers.

Claſs and Order, *Pentandria Digynia.*

*Characters.*] CALIX, umbellate flowers, having the general umbel compoſed of ſeveral ſmaller plane umbels, with the general involucrum formed of many ſpear-ſhaped, reflexed leaves, and the partial ones of many ſmall narrow leaves.—COROLLA, the general umbel is uniform and compoſed of many ſmall flowers, each having five heart-ſhaped, inflexed petals.—STAMINA, five filaments with ſimple antheræ.—PISTILLUM, a ſmall germen under the flower, two reflexed ſtyles, and obtuſe ſtigmas.—PERICARPIUM, none.—SEMEN, two oval ſeeds to each floret.

There are ſeven or eight ſpecies of this genus, one of which only, an eſculent, have merit as garden-plants, ſome being wild weeds of ditches, and other moiſt places in England, &c. and ſeldom admitted into gardens.

The garden-ſort is,

SIUM *Siſarum.*

*Siſarum, or Skirret.*] Hath a perennial eatable root, compoſed of ſeveral oblong, thick, fleſhy fibres, collected into a head at top, crowned with pinnated leaves, of two or three pair of oblong folioles and an odd one, and when it ſhoots to ſeed, riſes with an upright ſtalk a foot high, having ternate leaves above, and terminated by an umbel of white flowers.

The root of this plant is eatable, of a ſweetiſh reliſh, being boiled and eaten like carrots and parſneps, and was formerly in much eſteem, but has become in diſrepute of late years; it is, however, accounted a very wholeſome root.

*Method of Propagation.*

It is propagated both by ſeed and by off-ſets of the roots.

By Seed.—In ſpring, any time in March, or beginning of April, is the ſeaſon for ſowing, chuſing an open ſituation, which being properly digged, ſow the ſeed either broad-caſt all over the ſurface and raked-in, or in ſhallow drills a foot aſunder; they will come up in a month or five weeks, and in two or three weeks after, they muſt be cleaned from weeds and thinned either by hand or hoe, leaving the plants ſix or eight inches diſtance; the plants will ſoon after cover the ground with their leaves, and the roots encreaſe in growth till the leaves decay in autumn, then they will be fit for uſe, and continue good till next ſpring, when they will ſhoot up for ſeed.

By Off-ſets of the Root.—The roots put out many ſide off-ſets, which in ſpring being ſlipped off ſeparately each with one or more buds or eyes at top; and in an open ſpot of ground plant them with a dibble in rows a foot

ſoot aſunder, with the crown of each ſlip an inch within the ground; or may plant them thin by trench planting, in ſmall trenches, as for aſparagus, placing them erect againſt the back of the trench, and cover in the mould over them the above depth; in either method the plants will ſoon come up ſtrong, and by autumn following the roots will be full grown, and encreaſed into large bunches fit to take up for uſe from October till March.

To ſave ſeeds of this plant, let a few of the large roots ſtand to ſhoot up into ſtalks, which will flower in July, and the ſeeds will ripen in autumn.

SLIPS, the propagating plants by Slips.

Great numbers of plants, both woody and herbaceous kinds, are propagated plenteouſly by Slips; and the method is very eaſy as well as very expeditiouſly performed.

It is effected in the woody kinds by ſlipping off young ſhoots from the ſides of the branches, &c. with the thumb and finger, inſtead of cutting them off with a knife, and are therefore called Slips, which in numerous ſmall, ſhrubby plants will grow; but is more commonly practiſed to the lower ligneous plants, ſuch as ſage, ſouthernwood, roſemary, rue, lavender, and moſt other low ſhrubby growths, which may with the utmoſt facility be multiplied by this method: and the beſt ſeaſon of the year for effecting the work is generally in ſpring and beginning of ſummer, though many ſorts will grow if planted at almoſt any time of the year; but the proper ſeaſon for the various plants is always hinted in their culture, under their reſpective genera.

Obſerve, in performing the work of ſlipping theſe ſorts, to chuſe the young ſhoots chiefly of but one year's growth, and in many ſorts the ſhoots of the year will grow the moſt readily even to plant the ſame ſummer they are produced, eſpecially the hard-wooded kinds, but in the more ſoft-wooded plants, the Slips will alſo often readily grow when a year or two old; being careful always to chuſe the moſt robuſt ſhoots ſituated on the outward part of the plants, from three to ſix or eight, or ten inches long, ſlipping them off cloſe to the branches; and clear off the lower leaves, then plant them two parts of three in the ground, giving occaſional ſhade and water, if in ſummer, till properly rooted; and then towards autumn tranſplant them where they are to remain.

Many ſhrubby plants growing into large bunches from the root, ſuch as roſes, ſpiræas, raſpberries, and numerous other ſorts, all of which may be ſlipped quite to the bottom into ſeparate plants, each furniſhed with roots, and may be planted either in nurſery-rows, or at once where they are to remain.

As to the ſlipping of herbaceous plants, numerous ſorts multiply by the root, &c. into large bunches, which may be ſlipped into many ſeparate plants; and it is effected by ſlipping off the encreaſed ſuckers or off-ſets of the root, and ſome ſorts by the off-ſets from the ſides of the head of the plants, and ſome few ſorts by Slips of their ſtalks or branches; but for the greater part by ſlipping the roots, as in moſt of the bulbous-rooted tribe, and innumerable fibrous-rooted kinds.

The ſlipping of the bulbous plants is performed in ſummer when their leaves decay, and the roots being then taken up, ſlip off all the ſmall off-ſets from the main bulb, and the Slips and off-ſets ſhould generally be planted again ſoon in nurſery-beds for a year or two. See BULBUS.

And as to the fibrous-rooted ſorts, the ſlipping ſhould generally be performed in the ſpring, or early part of autumn, which may be effected either by ſlipping the outſide off-ſets with roots, as the plants ſtand in the ground; or to perform it more effectually, may take the whole bunch of plants up, and ſlip them into ſeveral ſeparate parts, each Slip being furniſhed alſo with roots, planting them, if ſmall, in nurſery-rows a year, to gain ſtrength; or ſuch as are ſtrong may be planted at once where they are to remain.

Farther particulars of the method of ſlipping plants is mentioned in the culture of the different ſorts under the proper heads.

SMALL SALLAD HERBS.

Several young ſeedling-herbs of a warm nature are in eſtimation for Small Sallading to mix with the larger principal Sallad Herbs, as obſerved on a former occaſion, ſuch as lettuce, endive, and celery, in order to improve their flavour and wholeſome quality.

The ſorts therefore in general eſtimation as Small Sallad Herbs, are creſſes, muſtard, radiſh, rape, and turnep; alſo ſometimes lap-cabbage-lettuce for winter and early

ſpring uſe; all of which herbs conſidered as Small Sallading, are always in perfection as ſuch, when quite young, that is, not more than a week, or ten or twelve days old, whilſt they remain moſtly in the ſeed-leaf, being then cut up cloſe to the ground for uſe; for they being moſtly of a warm reliſh, in which conſiſts their chief excellence for winter and ſpring Sallads, if ſuffered to grow large, and come into the rough leaf, they become of a diſagreeable, ſtrong, hot taſte; but being uſed when only a few days old, conſiſting principally of the ſeed-leaves, as juſt above obſerved; they eat exceedingly tender with an agreeable warm flavour, highly reliſhing to moſt palates, which renders them eminent furniture to mix in all winter and ſpring Sallads particularly; but from June till September they are not ſo generally regarded, though many perſons are fond of them at all ſeaſons of the year, and in default of other Sallad Herbs many often uſe them alone as Sallading in the winter and ſpring months; they, however, are preferable when mixed with lettuce and the other principal Sallad Herbs. See SALLAD HERBS.

Let it be obſerved, all the above-mentioned Small Herbs belong to different genera, and that, beſides their uſes for Sallads, ſeveral of them are alſo cultivated for other uſeful purpoſes, all of which is hinted, together with their proper culture for their ſeveral uſes under their reſpective genera; but conſidered as Sallad Herbs, they require a particular culture, and we therefore judged it eligible to exhibit their culture for that purpoſe under this head, *Small Sallad Herbs*, and, as ſuch, the ſame culture ſerves for all the ſorts, they being all raiſed from ſeeds at various ſowings the year round, as directed in their culture below.

Obſerve, therefore, that for the purpoſe of Sallading they may be obtained young at all times of the year, in ſpring and ſummer in the open ground; and in winter under ſhelter of frames and glaſſes, and occaſionally in hot-beds.

*General Obſervations on their Culture.*

They are all raiſed from ſeed, which for Sallading, is ſowed at all times of the year, when they are required; in the open ground, from March till October or November, and in the winter months they will require ſhelter of frames and glaſſes, &c. and the aſſiſtance of hot-beds occaſionally, as we before noticed: and where a conſtant ſupply is required, a repetition of ſowing will be requiſite every week, or ten days, or a fortnight, according to the ſeaſon of the year and the demand for uſe, being ſowed generally in flat ſhallow drills, very thick, and only juſt covered with earth, and are alſo ſometimes ſowed all over the ſurface, eſpecially upon hot-beds.

But as they require ſomewhat different culture at different times of the year, we will exhibit it under different heads accordingly, viz. *Spring Culture*, *Summer Culture*, *Winter Culture*.

*Spring Culture.*

In the ſpring-culture of Small Sallading, it may be raiſed both in the open borders and in hot-beds occaſionally, according as it may be required, early or late, but when it is required as early as poſſible it muſt either be ſowed in hot-beds under frames and lights, &c. or in default of a hot-bed, in a warm border under glaſſes.

Firſt the early culture in Hot-beds.—You may begin to ſow in hot-beds any time in January or February, and when a conſiderable ſupply is daily required, may continue ſowing every week or fortnight in hot-beds till March, or during the cold weather. Let a moderate hot-bed of dung be made for one, two, or more garden-frames, only half a yard, or two feet depth of dung, according to the temperature of the ſeaſon, as the heat is only required to bring up the ſeeds quickly, and forward the plants about a week; place a frame thereon directly, and mould the bed all over with light rich earth, five or ſix inches thick, making the ſurface level and ſmooth; then if you would forward your Sallading as much as poſſible, you may directly ſow the ſeed, which may be effected either in drills as ſhallow as poſſible, about three inches broad, and flat at the bottom, and three inches aſunder, ſowing the ſeeds of each ſort ſeparate and very thick, ſo as almoſt to cover the ground, and only juſt cover them with earth: or, to make the moſt of the bed, may ſow the ſeed all over the ſurface, previouſly ſmoothing it lightly with the back of the ſpade, then ſow the ſeeds all over the bed, the different ſorts ſeparately, and all very thick, as juſt obſerved, and after preſſing them all even and lightly down alſo with the ſpade, cover them very thinly with earth, by ſifting over as much light mould as will only juſt cover the ſeed, as aforeſaid, and as

ſoon as the ſowing is performed in either method, put on the lights; the ſeeds will quickly germinate and will come up in two or three days or leſs, being careful at this time to give vent to the ſteam ariſing in the bed, as well as indulge the plants with plenty of free air daily, either by tilting the lights in back or front, according to the temperature of the weather, or by drawing the lights a little down, or taking them quite off occaſionally in mild days at firſt; for the hot-bed being yet new, there will be a conſiderable ſteam ariſing, and the Sallading coming up very thick, unleſs due vent is given to paſs off the ſteam and admit freſh air, they will be apt either to burn, or fog (as the gardeners term it) and mould off as faſt as they come up. Such hot-beds, however, that are not freſh made, do not require all this precaution, but in new made beds it muſt be ſtrictly obſerved till the Sallading is all fairly come up, and as long as the ſtrong ſteam continues, and the plants will be fit for uſe in a week or ten or twelve days from the time of ſowing.

Thus continue to repeat the ſowing in hot-beds every week or ten days during the cold weather; the ſame hot-bed ſometimes retaining its heat, will admit of two ſowings, by ſowing again as ſoon as the firſt crop is gathered; however to obtain a regular ſupply daily, continue to make freſh hot-beds occaſionally, ſowing and managing them as above.

Sometimes where only a ſmall quantity for family uſe may be wanted only at a particular time, as ſoon as poſſible, and that you have the convenience either of cucumber and melon hot-beds, or a hot-houſe, &c. ſome ſeed of each ſort may be ſowed in pots or boxes, and placed in the ſaid hot-beds or ſtove juſt to bring up the plants fit for uſe; which on ſome particular occaſion may be ſufficient without making a hot-bed on purpoſe.

For want of frames and lights to place over the hot-bed, may uſe hand or bell-glaſſes, or arch the bed with low hoop-arches, in order to cover with mats at night, and in bad weather.

Or in default of hot-beds in cold weather early in the ſpring, may prepare part of a warm-border, or other ſunny ſituation, for ſome garden-frames and lights, hand-glaſſes, &c. raiſing the ground ſomewhat to the ſun; and having dug it, and raked it fine, then ſow the ſeed either in ſhallow drills, as before obſerved, or all over the ſurface in the manner as directed alſo in the hot-bed culture, covering it lightly with earth, and having ſet on the ſames and glaſſes, the ſeeds will ſoon come up, and the Sallading will be ready ſome conſiderable time ſooner than in the open ground.

Their Culture in the Full-ground.—From about the middle or end of February, or beginning of March, according to the forwardneſs or mildneſs of the ſeaſon, may begin ſowing Small Sallading in the open ground, repeating the ſowings every week or ten days; the firſt ſowing being performed on a warm border, and continue ſowing in that ſituation till the beginning or middle of April, then it may be ſowed in any of the open quarters, and in which the ſowings may be repeated weekly; but according as the hot-weather approaches ſhould rather ſow in a ſomewhat ſhady ſituation.

Let the ground for each ſowing, in the different ſituations, be properly digged, and the ſurface raked ſmooth.

And as to the method of ſowing in the open ground, it is moſt commonly in ſhallow drills, which ſhould be drawn with a ſmall or middling hoe held edge-ways downward, flat, or horizontally, drawing the drill along the width of the hoe, as ſhallow as poſſible, and flat or level at bottom, and three or four inches aſunder, in which ſow the ſeed evenly all along the bottom, each ſort ſeparate, and very thick, covering them in evenly with the fineſt of the mould, not more than a quarter of an inch deep; or if the ſmaller ſeeds are but juſt covered it is ſufficient, for the ſeeds being ſowed very thick, if deeply covered with mould the plants will not be able to riſe regularly.

Obſerve in the early ſpring-ſowings in the open ground, that in cold nights and all bad weather, it is eligible to cover the ground both before and after the plants begin to riſe, with large mats, which will be better if ſupported on low hoop-arches, or ranges of pegs ſtuck in the ground, juſt high enough to ſupport the mats a little from the earth, and by aſſiſtance of this covering, occaſionally in the early ſowings, you will enſure a more effectual crop, as well as forward the Sallading ſome days.

Remark, likewiſe, of the later ſowings, that when the dry warm weather commences it is proper to give occaſional waterings.

Obſerve farther, that as Small Sallading being always ſowed extremely thick, and the plants

plants conſequently coming up very cloſe together, and the ground being ſometimes by means of wet cruſted or caked at top, ſo as they cannot readily make their way through, in which caſe it is proper to whiſk the ſurface of the earth lightly with the hand, or with a ſlender broom juſt to break and diſperſe the mould a little.

*Summer Sowings.*

Small Sallading is not in general eſteem during the hot weather in ſummer, from the middle or end of May until September.

However, ſome require it all ſummer long, and it may be ſowed in any open ſituation from May till September: obſerving, however, that during the hot dry weather, it ſhould either be ſowed in ſome ſhady borders, or ſhaded with mats in ſunny days during the greateſt heat, from about ten till four o' clock, till the ſeed come up: and the ſowings ſhould be repeated every week; but as in ſummer theſe herbs ſoon become very hot taſted, to have them perfectly young and tender, it is adviſeable to repeat the ſowings every four or five days in very hot weather.

The ſowings are to be performed in ſhallow flat drills, as obſerved in the *Spring Sowing*, in the open ground, the ſeed ſowed very thick and but lightly covered with earth, for the reaſons formerly given.

And in very dry weather give daily waterings both before and after the plants begin to appear.

*Autumn and Winter Culture.*

From September to January, February, or March, is to be underſtood for the *Autumn and Winter Culture* of Small Sallading, the firſt part of which time it may be obtained in the open ground; but as ſoon as the cold weather ſets in, it muſt be raiſed under glaſſes, and in hot-beds occaſionally.

We may continue ſowing in the open ground all September and October, alſo, often, the greater part of November in mild ſeaſons; obſerving, that until towards the middle of October we may ſow them in any open ſituation, but from the middle or latter end of October, and in November, the ſowings muſt be on warm ſouth-borders, ſtill performing the ſowings in ſhallow drills; and in cold nights beſtow a covering of mats, or hand-glaſſes, &c. repeating the ſowings every week, or ten days, or a fortnight, as occaſion requires.

But when the cold weather commences in November, &c. it is adviſeable to uſe garden-frames and lights, or hand, or bell-glaſſes, chuſing a ſpot of light, rich ground in a ſunny ſituation, ſowing the ſeeds either in drills or all over the ſurface, according to the former directions, uſing the ſhelter of the frames and glaſſes as above; and thus you may raiſe plenty of Sallading, almoſt any time in winter, in mild weather; but when froſt comes, recourſe muſt be had to hot-beds.

However, in default of hot-beds to raiſe a conſtant ſupply all winter, it may be obtained great part of that ſeaſon ſowed in the natural earth, under good frames and lights, and other occaſional covering, except juſt during the time of long, ſevere froſts, when the aid of hot-beds will be neceſſary: however, in order to raiſe them as well as poſſible during winter, without the conſtant aid of hot-beds, let ſome warm ſouth-border of light rich earth, or other warm ſituation, be prepared for one, two, or more ſhallow garden-frames, raiſing it on the north ſide ſix inches, or more, ſo as to form it ſloping to the ſun, and having ſmoothed the ſurface, ſet on the frames, ſinking the back-part thereof near a foot, that the whole ſurface of the earth may be within eight or ten inches of the glaſſes, for it is of much advantage to have the glaſſes tolerably cloſe to the earth at this ſeaſon, in order to receive the greater influence of the ſun's heat, more eſpecially when without hot-bed heat at bottom. The ſeed may here be ſowed either in ſhallow flat drills, ranging from the back to the front of the frame, three inches aſunder, as in the ſpring-ſowings, or may be ſowed all over the ſurface, patting it lightly down with the ſpade, and then juſt cover it with earth as thinly as poſſible; directly put on the lights and keep them cloſe, and the plants will ſoon come up, repeating the ſowings once a week or fortnight; and thus you may continue a conſtant ſucceſſion of young Sallading moſt part of the winter; obſerving, in very cold weather, to line the frames cloſely about with dry litter; alſo in very cold nights, cover the glaſſes with mats or litter, though in very ſevere froſty weather, recourſe muſt be had to the aſſiſtance of hot-beds, as below.

By aid of hot-beds a plentiful ſupply may be had in all weathers, making ſlender dung hot-beds for frames and glaſſes, as obſerved in the early ſpring-ſowings, performing the

ſowings alſo, as there directed, and manage the bed in the ſame manner, being careful in time of ſevere froſts to line the frame all around cloſe with dry litter, covering the glaſſes alſo every night with the ſame material.

Thus far is the whole practical method of raiſing a plentiful ſupply of Small Sallading at all ſeaſons of the year.

In gathering Small Sallading for uſe at all times of the year, let it always be uſed when quite young and in the ſeed-leaf, before they grow large and ſend forth rough leaves, more eſpecially the muſtard, radiſh, and other rough-leaved kinds; and when thus young, they may be cut up quite cloſe to the ground, ſhanks and top together, all of which will then eat very tender and palatable.

But when they become large, and the rough leaves begin to advance apace, they are unfit for Sallading, as being rank and hot to the taſte, ſo ſhould be deſtroyed.

SMILAX, Rough Bindweed.

This genus conſiſts principally of ſhrubby climbers, moſtly of the ever-green tribe for the ſhrubbery, &c. riſing with trailing and cirrhoſe-climbing ſtalks, mounting by ſupport many feet high, adorned with heart-ſhaped, oval, and lanceolate leaves, in the different ſpecies, and apetalous, dioecious flowers.

Claſs and order, *Dioecia Hexandria.*

*Characters.*] CALIX, male and female flowers on ſeparate plants, having bell-ſhaped, ſix-leaved, ſpreading cups, which in the females are deciduous.—COROLLA, no petals.—STAMINA, ſix filaments with oblong antheræ in the males.——PISTILLUM, an oval germen, three very ſmall ſtyles crowned by oblong, reflexed, downy ſtigmas in the females.——PERICARPIUM, a globular, trilocular berry, having two globular ſeeds.

There are twelve or thirteen ſpecies, moſtly of a ſhrubby, climbing growth, ſome hardy, and ſome of tender nature; but it is principally ſome of the hardy kinds that are eſteemed for culture in our gardens, having long trailing ſtalks, ſome armed with prickles, others are inermous, or unarmed, and moſtly climb by means of cirrhi, or claſpers, upon the adjacent trees and buſhes, many feet high, which renders them proper furniture for thickets and wilderneſs quarters, &c. are all exotics from different foreign countries, both in Europe, Aſia, and America; and the following are the moſt noted ſpecies, conſiſting of ſeveral ſhrubby, and one herbaceous kind for hardy plantations, and ſome ſhrubby ſorts for the green-houſe, &c.

*Hardy Kinds.*

Of theſe ſorts the firſt ſeven are ſhrubby, and the eighth is an herbaceous plant, all of the climbing tribe.

[1]SMILAX *Aſpera.*

*Rough Spaniſh Smilax, or Common Rough Bindweed.*] Riſes with many long, ſlender, angular, trailing, prickly ſtalks, climbing ten or twelve feet high; heart-ſhaped, indented, prickly leaves, having nine longitudinal nerves, and ſmall bunches of white flowers at the ſides and ends of the branches, ſucceeded by round red berries.

*Variety.*] With black berries.

[2]SMILAX *Sarſaparilla.*

*Sarſaparilla, or Peruvian Rough Bindweed.*] Riſes with angular, prickly, climbing ſtalks; oval, obtuſe, trinervous, ſmooth leaves, and ſmall bunches of white flowers at the axillas, ſucceeded by red berries.

[3]SMILAX *Tamnoides.*

*Tamnoide Carolina Smilax, or Black-Briony-leaved Rough Bindweed.*] Riſes with taper, prickly, climbing ſtalks; large, oblong, heart-ſhaped, ſeptemnervous, ſmooth leaves, and at the ſides of the ſtalks looſe bunches of whitiſh flowers, ſucceeded by black berries.

[4]SMILAX *Laurifolia.*

*Bay-leaved Virginia Rough Bindweed.*] Riſes with taper, prickly, trailing, climbing ſtalks; oval-lanceolate, thick, ſtiff, ſmooth, trinervous leaves; and at the ſides of the ſtalks round bunches of flowers, ſucceeded by black berries.

[5]SMILAX *Excelſa.*

*Lofty-climbing Oriental Smilax.*] Riſes with angular prickly ſtalks, climbing to the tops of the higheſt trees; heart-ſhaped, ſmooth leaves, having nine nerves, and at the axillas, ſmall bunches of whitiſh flowers ſucceeded by red berries.

[6]SMILAX *Lanceolata.*

*Lanceolate Virginia Smilax.*] Riſes with taper inermous ſtalks; lanceolate, or ſpear-ſhaped, ſmooth leaves; and ſmall cluſters of flowers ſucceeded, by red berries.

[7]SMILAX *Rotundifolia.*

*Round-leaved Canada Smilax.*] Hath taper, prickly, climbing ſtalks; roundiſh, heart-ſhaped, acuminated, ſmooth leaves, having ſeven or five nerves; and ſmall bunches of flowers, ſucceeded by ſmall fruit.

[8]SMILAX *Herbacea.*

*Herbaceous*

*Herbaceous Virginia and Maryland Smilax.*] Hath herbaceous, angular, inermous, climbing ſtalks; oval, ſeptemnervous, ſmooth leaves; and umbellate bunches of flowers, ſucceeded by ſmall berries.

*Green-Houſe Kinds.*

They are ligneous climbers, like the others, but in winter require the ſhelter of a green-houſe.

[9]SMILAX *China.*

*China Rough Bindweed, or China Root.*] Hath a thick, fleſhy root; taper, prickly ſtalks, climbing near twenty feet high; oval, heart-ſhaped, quinquenervous, unarmed leaves; and at the axillas of the ſtalks bunches of ſmall flowers, ſucceeded by red berries.

[10]SMILAX *Pſeudo-China.*

*Pſeudo-China, or Baſtard China Root.*] Hath a large fleſhy root; taper, inermous ſtalks, garniſhed with heart-ſhaped, inermous leaves, thoſe on the branches being oblong, oval, and quinquenervous; and at the axillas bunches of ſmall flowers, ſucceeded by red berries.

All the above ten ſpecies of *Smilax* flower moſtly in June and July, which in all the ſorts are apetalous, and male and female on ſeparate plants, produced commonly in bunches from the ſides of the branches, are ſmall and make no ornamental appearance, and the female flowers are ſucceeded by berries, but they rarely ripen in England.

Theſe plants are perennial in root, and all the woody kinds are durable in ſtalk, and moſtly retain their leaves the year round.

Their roots are moſtly compoſed of many fleſhy fibres ſpreading widely on every ſide, ſending up many trailing ſtalks, which in moſt ſorts being furniſhed with cirrhi, they thereby mount upon any neighbouring ſupport.

In their native ſoil abroad they grow naturally in woods and hedges, and thrive beſt under the ſhelter, ſhade, and drip of trees and buſhes.

The hardy ſorts therefore are ſingularly adapted as furniture for thickets, groves, wilderneſs, and wood works, planting them towards the front between the trees and ſhrubs, where they will run and ſpread very agreeably; exhibiting themſelves as evergreens all the year.

And the tender ſorts being potted and placed in the green-houſe collection, allowing them ſupport to climb upon, they will effect a proper diverſity.

*Method of Propagation.*

Firſt the hardy kinds.—They are propagated by ſlipping the roots, by layers and by ſeed.

By ſlipping the Roots.——Many ſtalks riſing from the roots widely around, the outer young ones of which may be readily ſlipped off with roots to each, which being performed in autumn or ſpring, may be planted either in nurſery-rows for a year or two, or at once where they are to remain.

By Layers.—The ſtalks being layed in autumn, &c. they will be well rooted and fit for tranſplanting by autumn following.

By Seed.——This is commonly obtained from abroad by the ſeedſmen in the ſpring, which may be ſowed, ſome in pots, and plunged in an hot-bed to forward their germination, otherwiſe they are apt to remain a year or more before they grow, and ſome may be ſowed in the full ground near the ſhade of ſhrubs, &c. in a light, dry ſoil, in drills thinly, and covered about an inch and half deep, marking each row with a ſtick, becauſe they will probably not come up till next year, giving however the common nurſery care of weeding and watering the pots or beds, till the plants are come up, which ſhould have occaſional ſhelter in cold weather, and when two or three years old may be planted out, finally to remain.

Tender kinds.—Both the tender ſpecies may be propagated by layers, and by dividing the roots. Perform the laying in ſpring on the young ſhoots, which by autumn or ſpring following will be fit for potting off ſeparately: and by roots, theſe being ſlipped in March or April, and the off-ſets potted ſeparately, they will ſoon take root; managing the whole as other woody exotics of the green-houſe.

SMYRNIUM, Alexanders.

The plants are large herbaceous biennials and perennials, one of which was formerly cultivated in the kitchen-garden as a culinary herb, uſed for ſtewing, &c. they all riſe with large ternate and pinnated, many-lobed leaves from the root, and erect ſtalks, ſeveral feet high, crowned with umbels of flowers.

Claſs and order, *Pentandria Digynia.*

*Characters.*] CALIX, umbellate flowers, having the general umbel unequal and the ſmaller ones erect, without any involucrum, and

and ſcarcely viſible cups.——COROLLA, a uniform, general umbel, compoſed of numerous florets, having each five ſpear-ſhaped petals.—STAMINA, five ſmall filaments with ſimple antheræ.—PISTILLUM, a germen under each floret, two ſtyles, having ſimple ſtigmas.—PERICARPIUM, none; a nearly globular, ſtreaked, two-parted fruit, with two moon-ſhaped ſeeds.

There are five ſpecies, four biennials, and one perennial, moſtly plants of but little merit; one ſort, however, a biennial, being formerly in eſtimation as a culinary herb, we will exhibit its deſcription and mode of culture, &c.

SMYRNIUM *Oluſatrum. (Biennial.)*

*Oluſatrum, or common Alexanders.*] Hath a largiſh, downright, white, fibrated, biennial root, ſending up ſeveral large, triternate, many-lobed leaves, and upright ſtalks, dividing and branching four or five feet high, garniſhed with ternate, ſerrated leaves, having foot-ſtalks, and all the branches terminated by large umbels of white flowers.

This plant is a biennial, and is raiſed commonly from ſeed, which riſing in ſpring with large leaves, remains till ſpring following, then ſhoots up ſtalks for ſeed, and periſhes in autumn after.

The whole plant is of a ſtrong, warm, ſomewhat aromatic nature.

It being blanched like celery is then fit for uſe as a culinary plant, and is alſo uſed for medicine without blanching, its leaves and ſeeds being uſed for that purpoſe.

It is propagated by ſeed ſowed in the ſpring in any light ſoil and open ſituation, in ſhallow drills, fifteen or eighteen inches aſunder; and when the plants are come up two or three inches high, thin them to ſix or eight inches diſtance in the rows, to give them room to ſhoot up ſtrong, when earth muſt be drawn up about them; but in ſpring following, as they will ſhoot out again vigorouſly, let ſome earth be hoed up cloſe about each plant, and in three or four weeks they will be blanched for uſe.

SOIL, ſee EARTH, COMPOST, DUNG, MANURE, &c.

SOLANUM Night-ſhade, comprehending the Love-Apple and Potatoe.

This remarkable genus furniſhes many herbaceous and ſhrubby plants for ornament and uſe, conſiſting of annuals and ſhrubby perennials for adorning the pleaſure ground, green-houſe, and ſtove collections, and eminent herbaceous culinary plants; ſome being long trailers, others are of erect growth, garniſhed with pinnated and ſimple leaves in the different ſpecies, and all the ſorts adorned with ſmall rotated, five-parted flowers, ſucceeded by roundiſh, ſoft, baccaceous fruit, of various ſhapes, ſizes, and colours, in the ſeveral ſpecies, &c. being in ſome ſorts as large as apples and eggs, in others like cherries, and in ſome as ſmall as currants; ſometimes exhibiting a ſingular and ornamental appearance, and in ſome ſorts (*Love-Apple*) is alſo in eſtimation, as eſculents for culinary purpoſes; but the moſt valuable of all the ſpecies of this genus, is that admirable eſculent, *Solanum tuberoſum*, or Potatoe, for its large, tuberous, edible root, which is obtained for uſe almoſt the year round.

Claſs and Order, *Pentandria Monogynia.*

*Characters.*] CALIX, is monophyllous, cut half-through into five acute ſegments, and is permanent.—COROLLA, is monopetalous and rotaceous, having a ſhort tube below, with a large, ſpreading, plicated limb, dividing into five ſpreading, pointed ſegments.——STAMINA, five ſmall connivent filaments, terminated by oblong, connivent antheræ.—PISTILLUM, a roundiſh germen, ſlender ſtyle longer than the ſtamina, having an obtuſe ſtigma.—PERICARPIUM, a roundiſh bilocular fruit of the berry kind, punctuated at top, having a connivent fleſhy receptacle, and is filled with many roundiſh compreſſed ſeeds.

To this genus *Solanum* is now added, the *Lycoperſicon*, or Love-Apple, the *Melongena*, or Egg-Plant, and the *Potatoe*; they being found to be all of the Night-ſhade tribe, both in the characters and quality, which, according to Linnæus, is ſuppoſed to be more or leſs poiſonous, not excepting the Potatoe, though in a very ſmall degree; and may be ſaid to be the wholſomeſt of all the ſorts of Night-ſhade, there being about thirty different ſpecies, ten or twelve of which are cultivated in the Engliſh gardens for variety and uſe; conſiſting of ſome herbaceous annuals, and one ſhrubby perennial for the pleaſure-garden, &c. a few ſhrubby exotics for the green-houſe and ſtove, and herbaceous annuals and perennials for the kitchen-garden.

*Annual Kinds for the Pleaſure-ground.*

The principal ſorts are the Love-Apple and Egg-Plant, there being many other annual ſorts of leſs note; ſome are common weeds in

in our gardens, particularly the common black-berried Night-ſhade, comprehending many varieties; however the moſt material annuals under this head are the following.

[1]SOLANUM *Lycoperſicon.*

*Lycoperſicon, or Wolf's Peach, commonly called Love-Apple, or Tomatos.*] Riſes with ſtrong, herbaceous, unarmed, procumbent ſtalks, branching numerouſly ſix or eight feet long; large, pinnated, rank-ſcented leaves, of four or five pair of cut lobes, and an odd one; and ſimple racemous cluſters of ſmall yellow flowers at the axillas, ſucceeded by large, roundiſh, compreſſed, furrowed, ſoft, red fruit.

*Varieties are*] Common large, furrowed-fruited Love-Apple.—Cherry-fruited Love-Apple, having ſmooth, round, red fruit the ſize of large cherries,—Yellow cherry-fruited,—Scentleſs leaved,—Burnet-leaved.

This ſpecies and varieties are all of large trailing growth, and flower in June, July, and Auguſt, and the fruit ripens in September and October, when they appear both ornamental, and are fit for culinary uſes, particularly the common large-fruited kind, which is in high eſtimation in ſome families for improving ſoups, alſo for ſtewing, and ſauces, &c. for which purpoſes they are highly valued by the Spaniards and Portugueſe in particular, by which people they are commonly called *Tomatos*: ſo that this ſpecies is employed both as an eſculent and ornamental plant, and in both caſes its chief merit is in the fruit.

It is an annual in this country, whatever it may be in its native ſoil, which is the hot parts of America, but is hardy enough to ſucceed here in the open air in ſummer, being previouſly raiſed in hot-beds, thence tranſplanted; and as being of very rampant trailing growth, require the ſupport of walls, pales, or ſtakes, which ſhould alſo be in a ſunny ſituation, otherwiſe the fruit will not ripen freely.

[2]SOLANUM *Æthiopicum.*

*Æthiopian hard-fruited Love-Apple.*] Riſes with erect, ſmooth, herbaceous ſtalks, dividing and branching half a yard high; garniſhed with oval repand-angular leaves, and drooping pedunculi from the ſides of the branches, each bearing one white flower, ſucceeded by round, ſtriated, firm, red fruit.

[3]SOLANUM *Melongena.*

*Melongena, or Egg-fruited Night-ſhade, commonly called Egg-plant.*] Riſes with an erect, thick, firm, herbaceous ſtalk, branching erectly two or three feet high; large, oval, oblong, entire, downy leaves; and blue flowers ſingly from the ſides of the branches, having prickly cups, ſucceeded by large, oval, egg-like, pendulous fruit of different colours in the varieties.

*Varieties are*] Common white-fruited Egg-plant, having large, white, fleſhy fruit, the ſize and ſhape of a very large egg,——purple-fruited Egg-plant,—red-fruited—yellow-fruited,—prickly-fruited, &c

This ſingular ſpecies and varieties are all of upright firm growth, branching and forming full heads, well garniſhed with fine large leaves, and flowers in June and July, and the fruit attains perfection in Auguſt and September, being all of the large egg-ſhape; but the white-fruited ſort is in moſt eſteem as a curioſity, for its very great reſemblance to a hen's or ſwan's egg, effecting a ſingular appearance as they grow on the plants; and in ſome warm countries in the ſouth of Europe they are very commonly eaten and are accounted wholeſome: in England, however, they are not at all reliſhed, ſo that the plants are cultivated only as a curioſity, and as ſuch highly merit culture in the pleaſure-garden.

Theſe plants being natives of Aſia, Africa, and the warm parts of America, require to be raiſed and forwarded in hot-beds in this country.

[4]SOLANUM *Nigrum.*

*Common Black Night-ſhade.*] Riſes with an upright herbaceous ſtalks, branching a yard, or two or three feet high, oval, angular-indented leaves; and from the ſides of the branches roundiſh nodding umbels of white flowers, ſucceeded by black, and other coloured berries in the varieties.

This common black Night-ſhade, is chiefly uſed as a medicinal plant; it grows wild in gardens, fields, and dung-hills in England, and moſt parts of the world, often becoming a troubleſome weed, ſo is rarely cultivated; it, however, comprehends ſeveral varieties which were formerly conſidered as diſtinct ſpecies, but prove to belong all to the *Solanum Nigrum*, having all oval leaves, and nodding umbels, and are ſometimes cultivated in gardens for variety.

*The different Varieties are*] Common black-berried Night-ſhade, as above,—large, upright, ſpreading, black Night-ſhade,—greeniſh-yellow berried,——red-berried,—villoſe yellow berried, with taper hairy branches

and

and angular ſomewhat hairy leaves,—Guinea black-cherry-berried, with angular dentated branches, and ſmooth entire leaves,—Virginia, upright, black berried, with angular branches, and repand ſmooth leaves,—Jew's black Night-ſhade, with prickly branches. All of which produce their flowers in nodding umbels in ſummer, ſucceeded by umbellate cluſters of berries in autumn.

All the above four ſpecies and varieties are herbaceous annuals, being moſtly but of one ſummer's duration, particularly the Love-apples and *Melongena*; but ſeveral of the varieties of the *Solanum Nigrum* will often continue all winter if potted and placed in the green-houſe: however, an annual ſupply of all the four ſpecies muſt be raiſed every ſpring from ſeed; remarking, that the firſt three ſpecies, being exotics from hot countries of Aſia, Africa, and America, require to be raiſed in hot-beds in ſpring for tranſplantation into the full air in ſummer; but the fourth ſort being hardy, moſt of its varieties may be raiſed in the open ground.

Moſt of the above annuals may be employed in the pleaſure-ground for variety, more particularly the Love-apples and Egg-plants; and the former alſo as culinary plants for their fruit, as aforeſaid; but the *Melongena*, or Egg-plant, having great ſingularity in their egg-like fruit, merit a place in every curious garden: as to the *Solanum Nigrum*, or Black Night-ſhade, the beſt ſorts may be admitted in large gardens to encreaſe the variety; and if ſome are alſo planted in pots, trained up ſtreight, and placed in the green-houſe in October, they will remain green all winter, and exhibit an agreeable variety during that ſeaſon, with their umbels of ripe fruit.

*Their Propagation and Culture.*

As to the propagation and culture of all theſe annual Night-ſhades, they are all eaſily raiſed from ſeed ſowed annually in the ſpring; the three tender kinds in hot-beds, for tranſplantation in May or June, and the hardy ſorts (*Solanum Nigrum*) in the open ground.

For the tender kinds, Love-apples, and Egg-plant, prepare a moderate hot-bed in March or April, as for other tender annuals, covered with a frame and lights, and moulded over with light rich earth ſix inches thick, or may ſow them in any hot bed already made for other plants, ſuch as cucumber beds, &c. provided there is room, ſowing the ſeeds either in the earth of the bed in ſmall drills, or in pots and plunged in the hot-bed; and when the plants come up indulge them with freſh air and occaſional waterings, in common with the other plants of the hot-bed, and thin them where they ſtand too thick, that they may have room to gather ſome ſtrength previous to their tranſplantation; or if they are pricked out upon a freſh hot-bed, it will forward them conſiderably, which is more particularly neceſſary for the Egg-plants.

Obſerve, however, of the Love-apple kinds, in particular, that towards the latter end of May, when the plants are from about four to ſix or ſeven inches high, and the ſeaſon is become tolerably warm and ſettled, plant them out finally in the full ground on ſome warm border, placing them ſingly at ſome conſiderable diſtance, on account of their large ſpreading growth; planting ſome alſo againſt a ſouth fence, &c. to have the full ſun, as well as for the advantage of training their trailing branches along regularly; for unleſs they have ſupport they will trail upon the ground, and overſpread the neighbouring plants, and not ripen their fruit; but being trained againſt ſome ſunny fence like a wall-tree, or to a treilage or ſtout ſtakes, they will ſhew themſelves to proper advantage, and ripen their fruit more early and perfect, and exhibit it more ornamentally.

But as to the *Melongenas*, they being raiſed as above in a hot-bed, it is alſo adviſeable to forward them as much as poſſible by the farther aid of one or more hot-beds, in order to run the plants up to a large growth, and exhibit themſelves and fruit in full ſize and perfection.

Therefore when thoſe ſeedlings are one or two inches high, having a freſh hot bed ready, prick out a quantity about four inches aſunder, or plant ſome in ſmall pots ſingly, and plunge them in the hot-bed, giving water and occaſional ſhade, from the ſun till they are freſh-rooted, repeating the waterings as occaſion requires, and admit a due portion of freſh air every mild day by tilting the upper end of the lights; then, when the plants have been forwarded about a month in this bed, ſome may be thinned out with balls to their roots, and placed upon another hot-bed ſix or eight inches aſunder, managing them as before, it will ſtill forward them more conſiderably to a large ſtature for flowering and fruiting in perfection; obſerving, as they advance in height to raiſe the frame by

by degrees in proportion: likewiſe in their advanced growth, and as the warm ſeaſon approaches, begin to harden them gradually to the open air, in fine days; and towards the middle or latter end of June, the plants being grown tall and ſtrong, and the ſeaſon become warm and ſettled, they ſhould be removed into the full air, finally to remain: when thoſe growing in the earth of the bed may be taken up, with balls of earth to the roots, planting them either in the borders or in pots; and thoſe already in pots may be ſhifted into larger, and placed to adorn forecourts, or any other conſpicuous compartments, where they will effect a curious variety, with their egg-ſhaped fruit, all the autumn ſeaſon.

The hardy kinds.—As to the hardy kinds, conſiſting of ſeveral varieties, *(Annuals)* all the offſpring of the *Solanum Nigrum*, or Common Black Nightſhade, are eaſily raiſed from ſeed; ſowed in the latter end of March or in April, moſtly in a bed or border of light earth, ſeparately, either broad-caſt on the ſurface, and raked in, or in ſhallow drills, thinly, not more than half an inch deep; and the plants when about three inches high, planted out about the borders and in pots: or they may be ſowed at once where they are to remain, in patches in the different compartments, and the plants afterwards thinned to one in each place; or may ſow ſome of the foreign varieties, in particular, in a hot bed, to raiſe and forward them more effectually, planting them out as above.—Thus, in either method, they will arrive to a flowering ſtate in July, and produce their umbels of berries in autumn; obſerving, if deſigned to keep any of the more curious ſorts as long as poſſible, they muſt be potted, and placed in the green-houſe, where they will remain all winter.

*Hardy Shrubby Kinds.*

There is one hardy ſhrubby ſpecies, comprehending ſome varieties; moſtly wild climbing plants of the hedges, in England and moſt parts of Europe, but are retained in many gardens for variety.

[5]SOLANUM *Dulcamara.*

*Dulcamara, Bitter-ſweet, or Climbing Woody Nightſhade.*] Riſes with long, flexuous, inermous, woody ſtalks, climbing, by ſupport, many feet high; oblong, pointed leaves, with the upper ones halbert-ſhaped; and cymoſe cluſters of ſmall blue flowers, ſucceeded by bunches of ſmall, oval, red berries.

*Varieties.*] Common blue-flowered, as above—White-flowered—Variegated white ſtriped-leaved—Gold ſtriped-leaved—African thick leaved, formerly ranged as a diſtinct ſpecies, but proves to be only a variety of the *Solanum Dulcamara.*

They all flower in June, July, and Auguſt, and the berries ripen ſoon after.

All the varieties of this ſpecies are of the climbing tribe, and durable in root and ſtem, &c. but deciduous in leaf. The common ſort grows wild in field-hedges, in moſt parts of Europe, climbing over the neighbour-plants; and is often cultivated in ſhrubberies as a climber, in aſſemblage with the variegated ſorts.—But the variegated kinds are in moſt eſteem as garden plants, for the beauty of their elegant ſtriped leaves, and are therefore much employed as climbers.

As to the African thick-leaved variety, it being tender, requires to be potted, and treated as a green-houſe plant.

All the hardy varieties, however, *i. e.* the common, and two ſtriped kinds, &c. will grow freely almoſt any where in the full ground: the common ſort, in particular, will ſucceed alſo in any cloſe place, ſo is often planted even in towns and cities; and all theſe ſorts, conſidered as climbers, are proper furniture for ſhrubberies, wilderneſs quarters, groves, and thickets, and to run over arbours; allowing them ſupport of ſtakes, or placed to climb upon buſhes, &c. Allow the variegated ſorts generally a dry and rather poor ſoil, otherwiſe they will be in danger of growing too vigorous, and become plain.—They are eaſily propagated by layers and cuttings, in autumn, winter, or ſpring, and they will all be well rooted by autumn following, and fit for tranſplantation, either in nurſery rows, or at once, where they are to remain.

*Shrubby Green-houſe Kinds.*

There are many tender ſhrubby ſorts, of the quality of green-houſe plants, ſome of which are retained in our gardens for ornament and variety; which being exotics from warm countries, muſt be kept in pots, in order for moving to ſhelter in winter.

[6]SOLANUM *Pſeudo-capſicum.*

*Baſtard Capſicum; commonly called Amomum Plinii, or Winter Cherry.*] Riſes with a ſhrubby, upright, inermous, green ſtalk, branching numerouſly and erectly all around, three or four feet high, forming a regular

head, garniſhed with narrow, ſpear-ſhaped, repandous leaves; and white flowers, in ſeſſile umbels, or ſingly from the ſides of the branches, ſucceeded by many beautiful red berries, like cherries, appearing very ornamental all winter.

*Variety* ] With yellow berries.

Both the varieties are beautiful ſhrubby plants from Madeira, flowering in June, July, and Auguſt, and the fruit ripens in autumn and winter, which in both ſorts are of the ſhape and ſize of common cherries, but not eatable; appearing very beautiful all the winter ſeaſon; effecting a pretty variety in the green-houſe collection.

[7]SOLANUM *Sodomeum.*

*Apple of Sodom, Pomum Amoris, or Shrubby African Love-Apple.*] Riſes with a ſhrubby, prickly ſtalk, branching two or three feet high, having the branches alſo armed with ſpines; ob-oval, pinnatifid-ſinuated, prickly leaves, with the ſegments obtuſe; and large blue flowers in bunches, from the ſides of the branches, having prickly calyces; ſucceeded by large, round, compreſſed, yellow fruit, the ſize of a ſmall apple, ripening in winter.

[8]SOLANUM *Indicum.*

*Indian Nightſhade.*] Riſes with a ſhrubby, prickly ſtem, branching two or three feet high, with the branches alſo armed with ſpines; wedge-ſhaped, angular, entire, ſomewhat-hairy leaves, prickly on both ſides; and longiſh bunches of blue flowers at the ſides of the branches, ſucceeded by round, golden-yellow fruit, the ſize of cherries; ripening in winter.

[9]SOLANUM *Verbaſcifolium.*

*Verbaſcum-leaved, Downy, American Nightſhade.*] Riſes with a ſhrubby, inermous ſtem, branching a yard high, or more; oval, entire, downy leaves, and compound umbels of flowers at the axillas of the branches, ſucceeded by ſmall round berries.

Theſe four tender ſhrubby ſpecies flower here in June, July, and Auguſt; and they all ripen their fruit abundantly in the end of autumn, and in winter.

They are all of ſhrubby growth, durable in root, ſtem, and branches, and retain their leaves moſt part of the year. The firſt two ſorts are the moſt noted of theſe kinds in the Engliſh gardens, but the firſt ſort moſt of all; however all the four ſorts merit culture, to increaſe the variety in the green-houſe collection, as they will form a pretty diverſity, both in their flowers and fruit, moſt part of the year, but particularly in autumn and winter, when the fruit ripens, which exhibits a very ornamental appearance.

*Their Propagation and Culture.*

The propagation of all theſe green-houſe ſorts is principally by ſeed in a hot-bed in the ſpring, and the ſeed may be obtained at the nurſeries and ſeed-ſhops.

Therefore, in March or April, prepare ſome pots of rich light earth, in which ſow the ſeed thinly, and cover it half an inch deep, and plunge the pots in any common hot-bed, under frames and lights, giving frequent refreſhments of water, and the plants will ſoon come up, when a due portion of freſh air muſt be admitted daily, together with repetitions of moderate waterings occaſionally; and when the ſeedlings are about two or three inches high, it is adviſeable to prick them out upon another hot-bed; which being framed, and earthed ſix or eight inches deep, plant the ſeedlings therein, ſix inches apart, giving water, and ſhade from the ſun, till rooted. It is alſo eligible to prick ſome out in ſmall pots ſingly, and plunge them alſo in a hot-bed; obſerving in both methods to give frequent waterings, and admit a large ſhare of freſh air every day, by tilting the lights; and as the warm weather advances, harden the plants gradually to the full air, ſo as towards the middle or end of June they may bear to be fully expoſed; at which time thoſe not potted may be taken up with balls, and planted in proper pots (twenty-fours) and the already potted plants ſhifted into larger, placing them in the ſhade for a week or fortnight; managing them afterwards as other ſhrubby exotics of the green houſe.

*Tender Shrubby Kinds for the Hot Houſe.*

Under this head is compriſed four or five tender ſhrubby exotics, from the warm parts of America and Africa, and require the aid of a ſtove to preſerve them in this country; ſo are kept in pots, and placed in that department for variety.

[10]SOLANUM *Igneum.*

*Fiery-thorned American Nightſhade.*] Riſes with a ſhrubby prickly ſtem, branching a yard or more high, cloſely armed with fiery-red thorns; ſpear-ſhaped, acuminated leaves, revolute at the baſe; and ſimple racemous cluſters of white flowers at the ſides of the branches, ſucceeded by red, cherry-like berries.

[11]So-

[11]SOLANUM *Guineenſe.*

*Guinea Nightſhade.*] Riſes with a ſhrubby, inermous ſtem, branching five or ſix feet high, having alſo ſmooth branches; oval, entire leaves, and very ſlender lateral peduncles, terminated by branches of ſmall white flowers, ſucceeded by round yellow berries.

[12]SOLANUM *Tomentoſum*

*Tomentoſe Æthiopean Nightſhade.*] Riſes with a ſhrubby, tomentoſe, prickly ſtem, branching two or three feet high, armed with aceroſe prickles; heart-ſhaped, repandous, inermous, tomentoſe, or woolly leaves; and bunches of ſmall flowers, ſucceeded by golden-yellow fruit, the ſize of gooſeberries.

This ſpecies is remarkable for its tomentoſe property, it being almoſt totally covered with down.

[13]SOLANUM *Bahamenſe.*

*Bahama Nightſhade.*] Riſes with a ſhrubby, prickly ſtem, branching ſeveral feet high; ſpear-ſhaped, obtuſe, repandous leaves, reflexed in the margin; and ſimple cluſters of blue flowers at the ſides of the branches, ſucceeded by red berries.

[14]SOLANUM *Trilobatum.*

*Trilobate Jamaica Nightſhade.*] Riſes with a ſlender, ſhrubby, prickly ſtem, branching five or ſix feet high; wedge ſhaped, moſtly trilobate ſmooth leaves, and ſome with five lobes; and ſmall white flowers ſingly, ſucceeded by ſmall fruit, the ſize of elder-berries.

All theſe tender ſhrubby *Solanums* for the ſtove collections, muſt be always kept in pots of light rich earth, and retained moſt part of the year in the ſtove, except about two or three months in the heat of ſummer; and thus they will flower annually, and ripen plenty of fruit.

They are all propagated by ſeed in a hot-bed in the ſpring; ſowing it in pots of light earth, and plunge them in the hot-bed, and when the plants are come up two or three inches high, prick them ſeparately in ſmall pots, which plunge alſo in the hot-bed or bark-bed, and manage them afterwards as other ſhrubby exotics of the ſtove.

Their propagation may alſo be tried by cuttings; planting them in pots, plunge them in the bark-bed, and cover them cloſe down with a hand-glaſs.

*Hardy, Herbaceous, Eſculent Kinds.*

Under this head is compriſed only one ſpecies, Potatoe; having already mentioned a culinary ſpecies, among the tender annual kinds, viz. *Lycoperſicon*, or Love-Apple, ſometimes cultivated as an eſculent, as well as an ornamental plant; but the moſt valuable eſculent in this genus is the *Tuberous-rooted Nightſhade*, commonly called Potatoe, comprehending ſeveral varieties, all of hardy temperature, and which, for their fine, large, eatable roots, may be ſaid to be the moſt profitable culinary eſculents in the world, as they may be obtained in great plenty the year round, and are almoſt univerſally admired by all ranks of people; and in many countries are become a principal article of food among the common people. But Linnæus, and ſome other modern botaniſts, as we formerly remarked, conſidering all the Nightſhades of the lurid tribe of plants, *i. e.* ſuch whoſe foliage, &c. aſſume a diſagreeable green colour, of a forbidding aſpect, thereby ſuppoſe the plants to be more or leſs poiſonous; not excepting the Potatoe, though in a very ſmall degree: and it is ſaid a dullneſs attends the conſtant eating of them, and ſometimes a griping, more eſpecially when any conſiderable quantity is boiled and eaten in broth or ſoups, before the juice has been previouſly boiled out in another water. However, when Potatoes are thoroughly well boiled, roaſted, or baked, they prove a very palatable and wholeſome root, either to eat alone, or as ſauce to fleſh-meat, though roaſting is probably the wholeſomeſt way of uſing them. They however are cooked in various ways, in all of which they are exceedingly profitable for the ſervice of a family.

The botaniſts admit of only one real ſpecies of the Potatoe, comprehending ſeveral varieties, as above obſerved, differing in the form, colour, and other properties of the root, and colour of the flowers.

[15]SOLANUM *Tuberoſum.*

*Tuberous-rooted Peruvian Nightſhade, commonly called Potatoe.*] Hath a tuberous root, emitting numerous fibres, productive of many large roundiſh and oblongiſh, fleſhy, edible tubers; and immediately from the root riſe herbaceous, flexuoſe, ſmooth ſtalks, ſomewhat erectly, a yard long, garniſhed with large pinnated leaves, of ſeveral pair of entire lobes; and terminated by ſubdivided peduncles, ſupporting bunches of ſmall purple, or white flowers, in the different varieties, ſucceeded by roundiſh fruit, furniſhing ripe ſeed in autumn.

It is the tubers of the root only of this plant that is eatable; the fruit, the product of the ſtalk, is never uſed.

*Varieties.*] It comprehends two principal varieties, viz.—Red-rooted Potatoe, generally producing reddiſh or purple flowers.—White-rooted Potatoe, commonly bearing white flowers.—Each of which principal varieties compriſe ſeveral intermediate ones, ſuch as—Round-red—Oblong-red—Pale-red—Rough-red—Smooth-red—Red and white—Early dwarf-red—Kidney-ſhaped white Potatoe—Round-white—Large oblong-white—Large red-ended white kidney-ſhaped—Large conglomerated American Potatoe, being generally cluſtered together conſiderably, each root or tuber attaining a prodigious large ſize, being in eſtimation principally for feeding cattle.

This ſpecies *Solanum Tuberoſum* is a native of Peru, where the natives of the country commonly call it *Batatas*, and hence it here derived the European name Potatoe.

It may be conſidered both as an annual and perennial; obſerving in the firſt caſe, that the ſame individual root is only of one year's duration; for being planted in ſpring, each root ſends out numerous off-ſets, becoming proper Potatoes by autumn following, at which time the ſaid parent roots will be almoſt totally decayed; hence it becomes an annual: but in the ſecond caſe, the off-ſets of the parent root remaining ſound till the next year, when they alſo furniſh an abundant ſupply of off-ſets, hereby the ſpecies is perpetuated in great abundance from year to year, and becomes of a perennial nature: remarking, however, that a freſh plantation muſt be performed every ſpring.

With reſpect to the properties of the different varieties of Potatoes for uſe, there is no very material difference; though the red ſorts were formerly in greateſt eſteem, and, in our opinion, are the beſt for eating; though of late years, the Potatoe cultivators about London, who raiſe prodigious quantities annually, generally prefer the oblong white ſorts, particularly a ſort they call by the cant name of Red-noſed Kidney; it being a large, oblongiſh, whitiſh Potatoe, reddiſh at one end, and is eſteemed to be both more prolific in its produce, more ſaleable in market, as well as the fineſt eating Potatoe of any; therefore they have almoſt totally neglected the culture of the fine large red Potatoes, which by many are held ſuperior to the others for richneſs of flavour. It is, however, proper to cultivate a due ſhare of the beſt ſorts of each kind, all of which are raiſed in great plenty by the roots, either planted whole, or cut into ſeveral pieces, and being planted in the ſpring, each multiplies into a large cluſter of new Potatoes, fit for uſe the following autumn or winter; though ſometimes the early ſorts will be fit to take up for uſe in June or the beginning of July, of the ſize of large walnuts; ſo continue liſting them up by degrees as they are wanted till October or November, when the main crops will be full grown; at which period of growth, and not before, they are in the higheſt perfection; and the largeſt full-grown Potatoes are conſiderably finer eating than the ſmall ones, which generally eat hard, livery, and watery, entirely devoid of that fine rich meally flavour peculiar to large full-grown Potatoes, nor are they altogether ſo wholeſome for general uſe.

*Obſervations on their general Culture.*

Potatoes may be obtained for uſe plentifully almoſt the year round; the early ſorts being planted forward in the ſpring, they often afford tolerable little Potatoes fit to take up in June or July following, as formerly obſerved, eſpecially in the rich warm grounds about London, where they generally begin taking them up for market in June, before they are a quarter grown, or as ſoon as they attain the ſize of good walnuts, and thence continue taking them up occaſionally till the general crops arrive to full growth in the latter end of October; both becauſe early Potatoes fetch an extra price, and that the ground may be cleared time enough for the reception of ſome other crops, ſuch as turneps, coleworts, cabbage, ſavoys, &c. for winter, in which there is a double advantage; ſuffering, however, the greater part of the main crops of Potatoes to remain untouched until the end of October, or beginning of November, to attain mature growth, and thereby obtain the roots in their ultimate perfection, both for eating and long keeping: for Potatoes that are taken up before they have had their full growth, conſequently prove inferior both in ſize, quality, and duration; but being permitted to continue growing till autumn, about the latter end of October, or beginning of November, as above ſaid, till the ſtalks or haulm, begin to decay, the roots will be arrived to full maturity; and being then taken out of the ground in due time, and houſed in ſome cloſe dry apartment, they will keep in good perfection for eating all winter and ſpring, until the arrival of the new crops next ſummer.

All

All the varieties of Potatoes may be cultivated with ſucceſs in any open ſituation, both in gardens and the open fields; very conſiderable quantities being now cultivated in the fields round London, and moſt other great towns, for the ſupply of markets, they proving very beneficial crops; and the main crops being cleared off in due time, the ground is often ſowed with wheat, which generally ſucceeds remarkably well immediately after Potatoes.

As to the American Cluſter-Potatoe, it generally grows to a vaſt ſize, in a conglomerated or cluſtered manner, each often weighing ſeveral pounds, and at preſent is cultivated chiefly for feeding of cattle. Its culture is the ſame as the common ſorts, only requires more room to grow.

All the ſorts delight in a moderately light dry ſoil, and open ſituation; and if enriched with dung, the greater ſucceſs may be expected.

The plants are propagated moſt commonly by the root, *i. e.* the Potatoe, either whole or cut in pieces, each forming a proper ſet or plant; and being planted in March or April, in rows, two or three feet aſunder, twelve or eighteen inches apart in the rows, and five or ſix inches deep, they come up in a month or ſix weeks after, requiring no other culture than a little hoeing to kill the weeds, and looſen the ground; and each ſet will thus multiply into a large cluſter, juſt within the ſurface of the earth, attaining full growth the ſame year, fit to dig up for uſe in autumn, continuing good till ſummer following. See their *General Method of Propagation*, &c.

As Potatoes, therefore, are the moſt profitable of all our eſculent roots, and being of eaſy culture, their cultivation merits univerſal attention for the ſervice of families of all ranks, and are now in many places cultivated to great advantage for the ſupply of the markets, where they always prove a very ſaleable commodity.

In the markets Potatoes are ſold both by weight and meaſure; but in London they are always ſold by weight, at from two or three to four or five ſhillings the hundred, of ſix ſcore: though the early ones, at firſt coming in, ſell at a much higher rate; ſometimes at the enormous price of two guineas per hundred in Covent-Garden market: they, however, quickly fall to the aſore mentioned prices; and when they come in plentifully, they being generally ſorted into three ſizes, ware, middlings, and chats; the former being the largeſt, they fetch the beſt price, and the others ſell in proportion; all of which are retailed accordingly to the conſumers at from a penny, or three farthings, to one farthing per pound.

*General Method and Seaſon of Propagation, proper Soil, &c. and Method of Planting.*

The general method of propagating Potatoes is by the root or Potatoe itſelf, being the tuberous part of the root, and the only part to plant for propagation; and which may be planted either whole or cut in pieces, as formerly mentioned, and each planted ſeparately at certain diſtances, directed below.—Potatoes may alſo be raiſed from ſeed, by way of experiment, to gain new varieties: by roots, however, is the only eligible method of propagation for general culture.

Firſt by Roots.—As we above obſerved, the propagation by roots being by planting the tubers or Potatoes themſelves, a proper quantity ſhould be procured in due time in the ſpring for planting, obſerving always to procure the fineſt moderately large roots of the reſpective varieties for ſets; though ſome uſe only the ſmall chats, for planting; but we have always found that the middlings, or full-ſized roots, generally yielded the largeſt Potatoes in return. Likewiſe obſerve, that it is of much importance to change your ſets; that is, not always continue uſing thoſe of your own crops, or of any other place conſtantly, but every two or three years at moſt procure a freſh parcel of ſome different diſtant growth, which will be found of great advantage, both in preventing a degeneracy, and in the goodneſs of the crops; remarking likewiſe, the ſets may either be planted whole, or each cut in three or four pieces, preſerving one or more eyes, or buds, to each cutting: they, however, ſhould not be cut until juſt the time for planting.

The general ſeaſon for planting Potatoes is from about the middle or latter end of February to the middle of April; remarking that the early ſorts, &c. for forward crops, may be planted in the latter end of February, and early in March, in a dry warm ſituation; but for the general crops, March, and the firſt fortnight in April is the moſt eligible planting ſeaſon; eſpecially in moiſt land, as if planted earlier, and much wet ſhould ſucceed, it might rot the ſets, more particularly if cuttings: though in caſes of neceſſity, where the

the ground is not ready, &c. Potatoes may be planted any time in April, or even in May, and will yield tolerable crops by October: however, thoſe planted towards the middle or latter end of March, and early in April, are principally to be depended on for the main crops to attain due perfection.

Obſerve, as to the proper ſituation and ſoil in which to plant Potatoes, always allow them an open expoſure, and tolerably dry ſituation; and as to ſoil, they are generally the moſt proſperous in a moderately light pliable ground; none better than a good ſandy loam, in which they commonly yield fine crops: however, chuſe any the moſt convenient moderately-light land, of a pliant free-working nature, and not wet; and the ground may either be ſuch as has been in conſtant digging or ploughing before, or in graſs-ſward; obſerving in the former caſe, that if the ground be rather poor, be ſure to beſtow a good coat of dung, to be dug or ploughed in; but if the ground is in ſward, and a freſh good ſoil, hardly any dung will be required; for the ſward being digged or ploughed in properly, it generally anſwers the purpoſe of dung the firſt year, and is commonly productive of excellent crops.

The ground may either be digged or ploughed for the reception of the plants. The digging is generally the moſt practicable for gardens, and being performed one full ſpade deep will be ſufficient; and as to the ploughing, this is commonly practiſed for large quantities in fields, being careful to plough the full depth; and, if not graſs-ground, if ploughed again croſs-ways it will be the greater advantage; or in ſtubborn land, two or three ploughings may be neceſſary to divide and break the ſoil properly, performing the firſt ploughing in autumn or beginning of winter, and croſs-ploughed in ſpring towards the time for planting; and if after the ploughing, the ſurface is rough and ſtubborn, a good harrowing will be proper for the better reception of the plants.

Then with reſpect to the method and order of planting the Potatoes, they are planted either with a dibble, or holed in with a ſpade, or drilled in with an hoe, &c. as hereafter explained, in rows two feet aſunder at leaſt, twelve or fifteen inches diſtant in each row, and five or ſix inches deep, as directed below; remarking, however, the American cluſtered Potatoe in particular ſhould generally be allowed a yard diſtance between the rows; but ſome adviſe all the ſorts to be planted at that diſtance in the field-culture, in order both to admit of horſe-hoeing frequently between the rows, to looſen the ſurface of the earth effectually, and to allow a greater ſcope for growth, and a more free admiſſion of ſun and free air, to give all the chance poſſible for improving the ſize of the Potatoes.

But as to the particular methods of planting them, the following ſix are occaſionally practiſed, &c. dibble-planting, drill-planting, holeing-in-planting, furrow-planting, trenching-in-planting, and bedding-in-planting; but the three or four former are the moſt eligible methods.

By Dibble-planting.—This may be performed either with a common large garden-dibble, blunted at the bottom, making holes therewith five or ſix inches deep, at the diſtance before mentioned, dropping one ſet in each hole as you go on, and ſtriking the earth over them; but thoſe who plant large quantities in fields, have generally a Potatoe-dibble for this purpoſe, being a large long dibble, about a yard in length, with a croſs handle at top for both hands, having the lower end thick, blunt, and ſhod with iron ſix or eight inches up, the iron being alſo obtuſe or blunted at the lower end; and about ſix inches from the bottom is fixed an iron ſhoulder, both for the convenience of a tread for uſing the feet occaſionally to thruſt it into the ground, and that by ſtriking it in always to the ſhoulder, it makes the holes all an equal depth. With this inſtrument one perſon is employed in making the holes a foot or more aſunder, whilſt another follows cloſe after, and immediately drops one Potatoe-ſet in each hole; then the ground is well raked or harrowed over to cover in all the holes properly. But in gardens, where only a few are planted for family uſe, the dibbling-in the ſets may be performed with any common garden-dibble, thick and blunt at the lower end as hinted above; and one perſon may both dibble the holes and drop the ſets as he goes on, ſtriking the earth in upon them with the dibble, and afterwards rake the ground. —See the articles DIBBLE and PLANTING.

By Drill-planting.—Drills may be formed either with a large hoe or plough, two feet aſunder, and ſix inches deep, in which drop the ſets, a foot aſunder, and cover them in with the earth equally the depth of the drill.

By

By Holeing-in-planting.—This is performed with a ſpade. A man having a light handy ſpade, and beginning at one end of the line, takes out a ſpit of earth, forms a ſmall aperture about ſix inches deep, another perſon directly following after drops a ſet in the hole, the earth of the next ſpit immediately covers it up, and ſo on to the end.

By Furrow-planting.—This is ſometimes performed in fields, in very light pliable land, and is performed by dropping the ſets in the furrow immediately after the plough, and the ploughing of the next furrow turns the earth in upon the ſets of the firſt; and in another furrow, two feet from this, drop another row of ſets, which are covered in as above; and ſo on till the whole is finiſhed.

By Trenching-in.—This is ſometimes practiſed in gardens, in light ground, by way of experiment, and is effected as they proceed in digging or trenching the ground, being trenched in the common way, each trench two ſpades wide, and one ſpade deep, placing one row of Potatoes in each trench. Beginning, therefore, at one end of the ground, open a trench the proper width and depth, as above, then paring in the top of the next trench deeply, together with ſome good dung in the bottom of the firſt, levelling it evenly; and upon which lay the Potatoe-ſets in a row along the middle a foot or more aſunder: then digging along the ſecond trench a moderate ſpade deep, turning the earth thereof into the firſt trench, over the ſets, ſix or ſeven inches deep; this done, dung the bottom of the next open trench, and proceed with the digging and planting as before; and thus continue trench and trench to the end.

By Bedding-in.—This is ſometimes done in low wettiſh land, for the ſake of raiſing the beds, and ſinking the alleys deep enough to drain off the too copious moiſture, and is thus performed. The ground is divided into four, five, or ſix-feet wide beds, with alleys two or three feet wide between bed and bed; and the beds being digged, the Potatoe-ſets may then be placed upon the ſurface in rows lengthwiſe; and then dig out the alleys a ſpade deep, caſting the earth thereof over the ſets about ſix inches thick; or the alleys may be firſt digged out to raiſe the beds, and the ſets then planted with a dibble in the common method. Thus, by either of theſe methods, in wet ground, the alleys being ſunk, and the beds raiſed, the alleys drain off the redundant moiſture, which might rot the ſets before they begin to ſprout.

But in all the above methods of planting Potatoes, thoſe of dibbling-in, drilling, and holeing-in are the moſt in practice; and about London, the dibbling them in being the moſt expeditious, is the moſt commonly practiſed.

*Culture of the Plants.*

The Potatoes being however planted in either of the above methods, it now remains to ſpeak of their future management; obſerving, therefore, they are to remain in the ſame place to grow to perfection; and as to culture, when the plants come up, and weeds begin to over-run the ground, they require only two or three hoeings to kill the weeds, and looſen the ſurface of the ſoil; the Potatoes generally coming up in about a month or five or ſix weeks after planting, being accompanied by numerous weeds, which ſhould be hoed down in due time, before they grow large and overſpread the ſurface, or over-top the plants; performing the hoeings generally in dry weather by broad-hoeing, or in fields by horſe-hoeing, for the greater expedition; repeating the hoeings according as the future growth of weeds ſhall render it neceſſary, as well as to ſtir and looſen the ſurface of the ground about and between the plants, which will alſo prove very beneficial culture in improving thair general growth. After, however, two good hoeings, the plants will generally be advanced ſufficiently out of the reach of weeds, and become ſo ſpreading as to prevent their future progreſs, when no farther care will be required till the Potatoes are arrived to perfection. In hoeing Potatoes, many take the pains to hoe up a ridge of earth cloſe to each ſide of every row of plants in the firſt or ſecond hoeing, to ſtrengthen their growth more effectually, and render them more prolific; as the bottom of the ſtalks ſo landed up, generally emitting roots in the earth that become productive of Potatoes the ſame as the general roots.—Thus far is the principal culture of Potatoes, they hardly ever requiring any farther care after June and July; but the crops, however, continue growing till autumn, and the main crops in particular, which you deſign ſhall ſtand to have their full growth, will continue growing till October, or till the haulm begins to decay in November, when the Potatoes being full grown, they ſhould be then wholly

wholly taken up before they are attacked by froſt, and depoſited in ſome dry apartment for keeping: remarking, however, as we before obſerved, that new Potatoes being by many required as forward in the ſeaſon as poſſible; and ſometimes the early ſorts, growing in warm rich land, afford young Potatoes in June as big as walnuts, or little apples, in which caſe may begin to dig up ſome for preſent uſe; though only a few ſhould be taken up at a time at this early ſeaſon, juſt by way of rarity, not more than can be uſed in a day or two; for, being not a quarter grown, they will not keep long out of the ground; if even but a few days, they will neither boil, bake, or eat well; but may continue thus taking up a few at a time occaſionally, ſo as to have a conſtant ſupply from June or July, till the perfection of the general crops in October and November.

*Method of digging them up, and houſing them for Winter and Spring Uſe.*

As to the method of digging up the Potatoes for uſe, it is moſt commonly performed in gardens with a three-tined fork; and ſometimes in fields they are ploughed up for the ſake of making quicker diſpatch for conſiderable quantities; but the forking them up, however, makes the cleaneſt work; and there are Potatoe-forks for the purpoſe, being made with flat tines, blunted at the point, and fixed upon a ſpade-handle. Moſt country ſmiths know how to make them; and are ſold at the iron-mongers, and at many of the nurſeries.

Previous to the digging up the Potatoes, the haulm ſhould be cleared away for ſome conſiderable ſpace cloſe to the ground, turning it off in heaps, to clear the ſurface, for the greater convenience and expedition in digging, &c. then, if intended to fork them up, proceed by firſt opening a trench along one end of the ground one ſpade wide and deep, and then go on with the digging up the Potatoes the ſame depth, having large baſkets, &c. placed, in which to throw them as they are digged up, being careful to dig all the ground regularly along ſpit and ſpit, the bottom part of the haulm remaining to each root will be ſome direction for placing the fork, turning the ſpits clean up before you into the open trench, and pick the Potatoes of each plant clean out, great and ſmall, as you go on, and put them in the baſkets. As you advance with the digging, continue clearing off the haulm upon the dug ground in heaps, which may afterwards be burned to ſerve as manure, and thus proceed till the whole is digged up; taking the opportunity, whilſt dry, to houſe thoſe directly that are intended for long keeping.

The taking up Potatoes by the plough is performed by ploughing the ground in the common method, which turns up the Potatoes very expeditiouſly to the top, ſeveral hands following immediately after to pick them clean out.

Immediately after the Potatoes are taken up, pick out all the cut and bruiſed ones; likewiſe may ſort out the ſmall chats from the large ware, and then let the main crops for keeping be houſed, when they are perfectly dry, in ſome dry cloſe place, well defended from the free air, wet, and froſt, in which the Potatoes may be depoſited in a large heap, if brought in quite dry; obſerving, that if a ſufficient quantity of dry light earth, or ſand, is ſtrewed between them from time to time, as they are houſed, it will prove advantageous in keeping them in greater perfection, covering the whole, however, at laſt with a good thickneſs of dry ſtraw, and keep the apartment cloſe ſhut; for the more the external air is excluded, the better they will keep.

Thus the main crops of Potatoes being taken up and houſed, they will remain ſound all winter and ſpring, till the arrival of new ones next ſummer, as we before remarked, provided they are well defended, as above, from wet and froſt.

It is however to be remarked, that at the approach of ſpring, towards March and April, many of the Potatoes will vegetate and ſprout forth in the houſe, ſo ſhould be turned over occaſionally, and ſtill continue a thick covering of ſtraw, to exclude the external air as much as poſſible, and they will keep till June.

*Raiſing them from Seed.*

By Seed.—This is very rarely practiſed, becauſe their great encreaſe by roots render it unneceſſary; beſides, the propagation by roots is conſiderably the moſt expeditious and effectual method: ſo that raiſing Potatoes from ſeed is only ſometimes practiſed by way of experiment, and to try to gain new varieties. However, when this is intended, let ſome of the firſt flowering-plants be marked for ſeed, which gather in autumn when full ripe, and in March or April following ſow it in ſome light

light ſoil, in an open ſituation, in ſhallow drills, a foot aſunder; and when the plants come up, keep them clear from weeds till autumn, when, about the end of October or November, take up the roots, ſelect the fineſt and largeſt, which preſerve in ſand till ſpring, then plant them in the common way, and by autumn following they will have made proper encreaſe, and attain full perfection; and you will then judge of their properties.

SOLIDAGO, Golden-Rod. (*Virga Aurea*)

It comprizes many herbaceous flowery perennials, of upright growth, for adorning the pleaſure ground; riſing with numerous erect ſtalks, from one to ſeveral feet high, garniſhed moſtly with narrow, ſpear-ſhaped, and oval leaves, and the top terminated by numerous ſpikes of ſmall, compound, radiated, golden-yellow flowers.

Claſs and order. *Syngeneſia Polygamia Superflua.*

*Characters.*] CALIX, a compound radiated flower, having an oblong imbricated cup, compoſed of ſeveral narrow connivent ſcales.—COROLLA, is compound and radiated, having numerous funnel-ſhaped, quinquedented, hermophradite florets in the diſc, and tongue-ſhaped, tridented, female florets in the radius.—STAMINA, five ſhort hair-like filaments, with cylindric antheræ.—PISTILLUM, an oblong germen, filiforme ſtyle, crowned with a bifid ſtigma, and in the females two revolute ſtigmas.—PERICARPIUM, none.—SEMEN, a ſingle oblong ſeed in each floret.

The ſpecies of Golden-Rod were formerly greatly extended, but now reduced by Linnæus to twelve ſpecies, comprehending numerous varieties, one of which is a native of England and moſt parts of Europe, and moſt of the others are from North America; but all the ſorts are very hardy, and retained in our gardens as flowering-plants.

They are all fibrous-rooted perennials, that renew their ſtalks annually in ſpring.

The ſpecies are,

[1]SOLIDAGO *Virga Aurea.*

*Virga Aurea, or Common Golden Rod.*] Riſes with ſeveral angular, ſlender, almoſt flexuoſe ſtems, from one to two feet high, garniſhed with narrow ſpear-ſhaped leaves, and divide upward into paniculated, erect, cluſtered ſpikes of golden-yellow flowers, in Auguſt and September.

*Varieties.*] Talleſt Purple-ſtalked,—Broad ſawed-leaved,—Narrow ſlightly-ſawed leaved,—Low-ſtalked, &c.—Each of which was formerly ranged as a diſtinct ſpecies, but prove to be varieties only of the common *Virga Aurea.*

This ſpecies and varieties grow naturally in many parts of England, &c.

[2]SOLIDAGO *Canadenſis.*

*Canada Rough-leaved Golden Rod.*] Riſes with ſeveral round ſmooth ſtems, two feet high; narrow, rough, trinervous, ſlightly-ſerrated leaves, and terminated by corymbous panicles, with recurved ſpikes of adſcendent yellow flowers, appearing in July and Auguſt.

[3]SOLIDAGO *Altiſſima.*

*Talleſt, Late-blowing, American Golden Rod.*] Riſes with numerous round ſmooth ſtems, four or five feet high; ſpear-ſhaped, ſawed, enervous, or unveined leaves, and terminated at top by large corymbous panicles, with recurved ſpikes of adſcendent yellow flowers, in September and October.

*Varieties.*] There are many varieties of this ſpecies, differing ſomewhat from one another, but diſtinguiſhing themſelves ſpecifically, as this ſort, by their talliſh growth, enervous or unveined leaves, and large corymbous-paniculated recurved cluſters of flowers, as above, flowering late in autumn.

[4]SOLIDAGO *Latifolia.*

*Broad-leaved Canada Golden Rod.*] Riſes with erect angular ſtalks, two or three feet high; broad, oval, ſharp-pointed, ſawed leaves, and lateral ſingle ſpikes of yellow flowers, appearing in September.

[5]SOLIDAGO *Flexicaulis.*

*Flexicaulous Canada Golden Rod, with a Fig-wort Leaf.*] Riſes with a ſlender flexuoſe ſtalk, two feet high; oval, ſharp-pointed, ſerrated leaves, lateral ſingle ſpikes of pale-yellow flowers, in September.

[6]SOLIDAGO *Mexicana.*

*Mexican Golden Rod.*] Riſes with oblique brown ſtalks, a foot and half high; ſpear-ſhaped entire leaves, and erect, branching, leafy peduncles, bearing yellow flowers, in Auguſt and September.

[7]SOLIDAGO *Cæſia.*

*Smooth Maryland Golden Rod.*] Riſes with naked ſmooth ſtems, a foot and half high; garniſhed with narrow, ſpear-ſhaped, acute-pointed leaves, and terminated by corymbous panicles, with thick upper ſpikes of yellow flowers, appearing in September.

[8]SOLIDAGO *Lateriflora.*

*Lateral-flowered American Golden Rod.*] Riſes with ſmall ſtalks a foot and half high; narrow, unſerrated, pointed leaves, and the ſtalks branching laterally below, almoſt from bottom to top, in floriferous ſpikes, ſhortening, and terminating upwards, in corymbous panicles, with recurved cluſters of yellow flowers, in September.

[9]SOLIDAGO *Rigida.*

*Rigid or Stiff-leaved, Penſylvania Golden Rod.*] Riſes with many upright ſtalks, two feet high, branching alternately; oval, ſtiff, rough, cauline leaves, and the ſtalks and branches terminated by a corymbus of yellow flowers, in September.

[10]SOLIDAGO *Noveboracenſis.*

*New York Golden Rod.*] Hath oval, oblong, radical leaves, having foot-ſtalks, branching naked ſtalks, near two feet high, garniſhed with very ſmall leaves, and terminated by panicles of bright-yellow flowers, in September.

[11]SOLIDAGO *Minuta.*

*Leaſt Pyrenean Golden Rod.*] Riſes with ſmall ſingle ſtalks, only about a foot high, ſpear-ſhaped entire leaves, and the pedunculi riſing at the axillas, each ſupporting but one yellow flower, appearing in Auguſt.

[11]SOLIDAGO *Sempervirens.*

*Sempervirent, Fleſhy-leaved, New York, Golden Rod.*] Riſes with ſeveral upright reddiſh ſtalks, five or ſix feet high; ſpear-ſhaped, almoſt fleſhy, ſmooth leaves, with roughiſh margins, and the ſtalks terminated by large corymbous panicles of bright-yellow flowers, appearing in October, and great part of the winter, in mild ſeaſons.

All theſe twelve ſpecies of *Solidago* are very hardy fibrous-rooted perennials, of great duration in root, but moſtly annual in ſtalk, which riſing in ſpring, many from each root, arrive to a flowering ſtate in autumn; all the ſtalks adorned upward with long ſpikes of numerous ſmall flowers, exhibiting a very conſpicuous bloom a month or ſix weeks, and totally decay to the root in winter.

They are ſo hardy as to proſper in any common ſoil and ſituation, with but very little trouble in their culture.

Conſidered, therefore, as garden furniture, they are proper autumnal ornaments for almoſt every compartment of the pleaſure ground, and ſhould be introduced in aſſemblage in all large borders, ſhrubberies, wilderneſs quarters, and the borders of wood-walks, &c. where, being judiciouſly diſtributed, at eligible diſtances, they will effect a grand autumnal bloom for three or four months, in the different ſorts, as each root generally ſends up numerous ſtems cloſe together, often forming a large buſh, adorned above with numerous long panicles of golden-yellow flowers, which, though ſeparately ſmall, they being numerous and cloſely placed in each ſpike, are remarkably conſpicuous and ornamental, particularly all the foreign kinds.

The flowers are univerſally compound and radiated, compoſed each of numerous hermaphrodite and female florets, as expreſſed in the *Characters.*

Moſt of theſe plants increaſe exceedingly by the roots, a ſmall ſlip of which often multiplies, in one ſeaſon, into a large bunch; and ſeveral of the ſorts being apt to ſpread conſiderably, require to be ſlipped, or cut in all round every year or two, to keep them within proper bounds.

They ſhould, therefore, be always planted at ſome conſiderable diſtance from one another, and not too near ſmall plants.

*Method of Propagation and Culture.*

The propagation of all the ſorts is effected with great facility, by ſlipping or parting the roots in autumn and winter, ſoon after their ſtalks decay, or early in ſpring, before they begin to ſhoot; not ſlip them too ſmall, and may be planted at once where they are deſigned to flower, and will all blow in good perfection the following ſummer and autumn.

All the culture they require is, to have the decayed ſtems cut down every winter; and when the roots have encreaſed conſiderably ſpreading, ſhould be ſlipped or cut in all around, as before obſerved.

SORBUS. Sorb, or Service-tree.

This genus is compoſed of noted deciduous trees, of middling ſtature, principally for ornamental plantations; growing from twenty to thirty or forty feet high, or more, adorned with beautiful pinnated leaves of many pair of folioles, and pentapetalous flowers in umbellate cluſters, towards the ends of the branches, ſucceeded by large bunches of red berries.

Claſs and order, *Icoſandria Tryginia.*

*Characters.*] CALIX, is monophyllous, concave-ſpreading, quinquedented, and permanent.—COROLLA, five roundiſh concave petals, inſerted into the calix.—STAMINA, about

about twenty awl-ſhaped filaments, having roundiſh antheræ.—PISTILLUM, a germen under the receptacle, three ſlender ſtyles, and capitated ſtigmas.—PERICARPIUM, a roundiſh, ſoft, umbilicated berry, containing three oblong cartilaginous ſeeds.

There are only three ſpecies in this genus; all three hardy deciduous trees; the firſt of which is a native of England, &c. the others are exotics from the continent of Europe and other foreign parts; the two firſt ſorts, in particular, are common in moſt of the nurſeries and eminent plantations.

[1]SORBUS *Aucuparia.*

*Bird's Service, commonly called Wild Service-tree, or Mountain Aſh; alſo, ſometimes, Quicken Tree, Quick Beam, or Roan Tree.*] Riſes with a ſtraight upright ſtem, and regular branching head, twenty or thirty feet high, or more, covered with a ſmooth greyiſh-brown bark; pinnated leaves of eight or ten pair of long, narrow, ſerrated folioles, and an odd one; ſmooth on both ſides, and large umbellate cluſters of white flowers at the ſides and ends of the branches, ſucceeded by cluſters of fine red berries, ripe in autumn and winter.

*Variety.*] Yellow-ſtriped leaved.

This ſpecies grow wild in many parts of this iſland, on mountainous places, woods, and hedge-rows, often arriving to the growth of timber, and is admitted in moſt ornamental plantations, for the beauty of its growth, foliage, flowers, and fruit; the latter, in particular, being produced in numerous large red bunches all over the tree, exhibit a fine appearance in autumn and winter, till devoured by the birds, eſpecially the blackbird and thruſh, which are ſo allured by theſe fruit, as to flock from all parts and feed on them voraciouſly, but are not fit for domeſtic or houſhold uſe.

[2]SORBUS *Domeſtica.*

*Houſhold, or cultivated Service-Tree, with eatable fruit.*] Grows with an upright ſtem, branching thirty or forty feet high, or more, having a browniſh bark, and the young ſhoots in ſummer covered with a mealy down; pinnated leaves of eight or ten pair of broadiſh deeply-ſerrated lobes and an odd one, downy underneath, and large umbellate cluſters of white flowers at the ſides and ends of the branches, ſucceeded by bunches of large, fleſhy, edible red fruit, of various ſhapes and ſizes in the varieties.

*Varieties of the fruit are*] With Apple-ſhaped fruit—Pear-ſhaped fruit—Oval-fruited—With turbinated fruit—Compreſſed-fruited, &c.—all of which ripen in autumn; generally two, three, or four on a bunch, being ſometimes as big as little apples and pears, but are rarely palatable till they begin to aſſume a ſtate of corruption.

This tree is a native of the ſouthern warm parts of Europe, where its fruit is in high eſteem to ſerve up in deſerts, and is cultivated here, in many of our gardens, both as a fruit-tree, and to diverſify hardy plantations.

[3]SORBUS *Hybrida.*

*Hybridaceous, or Mongrel Service-Tree, of Gothland*—ſuppoſed a mongrel between the *Sorbus Aucuparia* and *Cratægus Aria.*] Grows twenty or thirty feet high; half-pinnated leaves, very downy underneath, and cluſters of white flowers, ſucceeded by bunches of roundiſh red berries in autumn.

Theſe three trees are all of the deciduous tribe, and of hardy temperature, growing freely in any of our open plantations in any common ſoil and ſituation; their foliation and flowering is generally pretty forward, commonly expanding their leaves in April, being all of the beautiful, pinnated, many-lobed kind; and the flowers appear in May and June, compoſed each of five ſmall petals, but many growing together in cluſters are conſpicuous enough; ſucceeded by baccaceous fruit, ripening in Auguſt, September, and October, often remaining on the trees after the fall of the leaf, particularly the *Sorbus Aucuparia*, which often retains its fruit all winter, or till devoured by the birds, as before remarked.

As to the merit of theſe trees in gardening, they all demand culture in every eminent ſhrubbery and other hardy plantations; being introduced as ſtandards, they will effect a fine variety in aſſemblage, with their elegant pinnated leaves and cluſters of flowers and fruit: the Wild Service, particularly, ſhould be plenteouſly interſperſed in all extenſive ſhrubberies, for the ſingularity of their numerous cluſters of berries in autumn and winter, which alſo prove food to encourage plenty of ſinging birds in the plantations.

But the *Sorbus Aucuparia* may alſo be introduced as a foreſt tree in timber plantations, being moſtly all heart is valued for many purpoſes.

And ſome of the *Sorbus Domeſtica* may alſo be employed as fruit-trees in the garden and orchard; ſome being trained as ſtandards, others as dwarfs, and againſt walls and in eſpaliers for variety, training them, nearly as directed for pears and apples.

They are raiſed in all the public nurſeries for ſale, particularly the firſt two ſorts.

*Method of Propagation, &c.*

They are all eaſily propagated in abundance, by ſeed, in the open ground, alſo by layers, though the ſeedlings generally make the handſomeſt plants.

By Seed.—The berries or ſeeds ripen abundantly in autumn, which is the proper time for ſowing them, being careful to have them perfectly ripened, gathering them in due time before devoured by the birds, and prepare to ſow them as ſoon after they are gathered as poſſible. For their reception, dig a ſpot of lightiſh ground in the nurſery, and divide it into four-feet-wide beds, in which ſow the berries, either in drills an inch deep, or bed them in, by raking the earth from off the bed near that depth; then ſowing the ſeed all over the ſurface, cover them all an equal depth, with the earth drawn off, as above, for that purpoſe: ſome of them will probably riſe the following ſpring, they, however, frequently remain till the ſecond ſpring before they come up; obſerving, in either caſe, that, in ſpring following, when the ſeedlings are a year old, they ſhould be planted out in nurſery rows, to remain till they acquire a proper ſize for final tranſplantation.

Sometimes, in order to forward the germination of theſe ſeeds, particularly the *Sorbus Domeſtica*, we ſow them in large pots, which being ſheltered under a frame in winter, and in ſpring plunged in a hot-bed, will bring up the plants the ſame year fit for tranſplantation in nurſery-rows the following autumn.

By Layers.—Having ſome of the trees, while young, cut down near the ground, it will force out lower ſhoots, which being layed, in the common way, in autumn and ſpring, they will readily emit roots, and be fit for tranſplantation in nurſery-rows in one year. This is alſo a certain method to continue any particular variety.

But the cultivated Service in particular, when deſigned to raiſe a quantity of fruit-trees for their fruit, they ſhould generally be propagated by graſting or budding the choicer-fruited kinds upon ſtocks, of any of the ſorts of *Sorbus*, raiſed from ſeeds or layers as above; they will alſo take upon pear-ſtocks.

SOUP HERBS.

Many ſorts of herbaceous vegetables, of the culinary tribe, are in great eſtimation for the improvement of ſoups, &c. a liſt of which, collected under this head, will ſerve to aſſiſt the memory in furniſhing the garden with the proper ſorts; remarking, that under the denomination of Soup Herbs, may alſo be underſtood all the ſorts of Pot-herbs uſed occaſionally in ſoups and broths, &c.

In ſome families a great variety of Soup or Pot-herbs are occaſionally required, and in others a few only of the common ſorts are uſed, ſo that every kitchen-garden ought to be furniſhed accordingly with the proper ſorts.

The following is, therefore, a liſt of the principal ſorts occaſionally uſed as Soup-herbs, &c. ſeveral of which, however, are alſo employed in various other culinary uſes, ſallads, &c. as well as for ſoups. Celery—Endive—Leeks—Lettuce—Spinach—Green and White Beet—Chard Beet—Orach—Borage—Bugloſs—Chervil—Sorrel—Parſley—Coriander—Pot-Marigold—Thyme—Winter Savory—Summer Savory—Pot or Winter Marjoram—Sweet Marjoram—Spear-Mint—Baſil—Love-Apple, or Tomatoes.

In all of which, except the Marigold and Love-Apple, the leaves are the only uſeful parts; but in the Marigold the flowers are the only part uſed, and in Love-Apple the fruit; remarking, likewiſe, that all the ſorts, but the laſt two of the liſt, (Baſil and Love-Apple) are of a hardy temperature, and may be eaſily raiſed in the natural ground; and the greater part are biennials and annuals, that require to be annually raiſed from ſeed; but the Thyme, Winter Savory, Pot or Winter Marjoram, Sorrel, and Mint, are perennials of many years duration, being raiſed ſome both by ſeeds and ſlips, others principally by ſlips; and the Baſil and Love-Apple, being tender annuals, require to be raiſed from ſeed in a hot-bed. See the culture of all the ſorts under their reſpective genera.

But the moſt prevailing Soup or Pot-herbs, of the above liſt, for general uſe are, Celery, Endive, Leeks, Spinach, Beet, Parſley, Chervil, Thyme, Marjoram, Savory, and Spear-Mint.

However, the particular merit of the different ſorts, together with the proper cul-

ture,

ure, is fully exhibited, each under its proper head.

## SOWING OF SEEDS.

Different methods of ſowing Seeds are practiſed occaſionally, as different ſorts require, and according to different practitioners; ſuch as broad-caſt ſowing and raking-in, —drill-ſowing,—bedding-in-ſowing, &c.

Broad-cast Sowing, &c.—This is the moſt common and expeditious method of ſowing in practice, particularly in the kitchen-garden, both for crops to remain, and for tranſplantation, and is performed by ſowing the Seed with a ſpreading caſt evenly all over the ſurface of the ground, either in one continued plat, or divided into beds, which is immediately raked with a large rake to bury all the ſeeds a due depth in the earth, ſome requiring to be raked in as light as poſſible, others half an inch or an inch or more deep, according to their ſize, &c.

In preparing for this method of ſowing, the ground is previouſly digged in the common way, making the ſurface level with the ſpade as you go on; no occaſion, however, to break the ſurface very fine, nor rake it, only forming it even with the ſpade, as juſt obſerved, and leave it a little roughiſh, more or leſs, in proportion to the ſize of the Seeds, that they may be more effectually buried a proper depth for germination; obſerving, for the general part, that the ground ſhould be ſowed whilſt freſh ſtirred, before the ſurface is rendered either too dry and hard by the ſun and wind, or made wet by rain; but when it is ſo moderately dry as not to clog to the feet or rake, and that it will readily fall under the rake in raking in the Seed.

All Sowing ſhould generally be performed in dry weather, more particularly all early ſowing in winter and ſpring; but in hot weather, in ſummer and autumn, it may often be eligible to take advantage of ſowing immediately after a ſhower or moderate rain.

After, however, having digged the ground as above, the Seeds are then to be ſowed broad-caſt, all over the ſurface, either in one continued plat, and raked in as before remarked; or the ground may be previouſly ſtepped out into four or five feet wide beds, with ſmall alleys between bed and bed, then ſowing the ſeed on each bed ſeparately, or may firſt ſow the ground broad-caſt, as above, and afterwards mark it out in beds, as aforeſaid. The laying out the ground in beds may, in ſome caſes, be the moſt eligible way; ſuch for example, if wet ground that cannot bear treading, we can ſtand in the alleys both to ſow the Seed and rake it in, without trampling the beds; and when weeding and watering becomes neceſſary, can alſo ſtand in the alleys to perform thoſe works; likewiſe to cull and gather the produce, or tranſplant where neceſſary; and that no ground may be loſt, we may in ſome caſes have ſucceeding crops coming forward in the alleys; however, in kitchen-gardens, where ground is ſcarce, or that it is of importance to make the moſt of every inch of ground, as well as uſe the moſt expeditious method of ſowing poſſible; the broad-caſt ſowing all over the ſurface, in one continued plat, as above obſerved, may be the more eligible practice, eſpecially in large grounds, as is the method of moſt of the kitchen-gardeners about London, for the main crops of carrots, parſneps, turneps, onions, leeks, Spaniſh lettuce, radiſhes, &c.

As to the method of ſowing the Seed in the Broad-caſt way, it is effected occaſionally both with an open and locked hand.

In the former caſe (ſowing open-handed) it is performed by delivering the Seeds with an open hand, and broad-ſpreading caſt, as practiſed in ſowing corn in the open fields, previouſly ſtepping out the ground in breaks, or certain widths, as a guide to ſow with the greater regularity; ſo proceeding with the ſowing along each ſpace with a regular ſtep and caſt, giving the hand a proper ſweeping cant forward, fully expanded at the delivery of the Seeds, making them ſpread abroad evenly in every part; and thus proceed up one ſpace and down another till finiſhed; which method of Broad-caſt ſowing is practiſed in large kitchen grounds in ſowing any conſiderable ſpace in one continued plat, as obſerved above.

But in the other caſe, (ſowing cloſe-handed,) that in narrow beds, when we intend ſowing them bed and bed ſeparately, or narrow borders, and other ſmall plats of ground, we commonly ſow or deliver the Seeds with a locked or cloſe hand, diſcharging them from between the fore-finger and thumb, opening or pinching the thumb more or leſs, according to the ſize and nature of the Seeds, and thickneſs they require to be ſowed, giving the hand a ſort of jerking turn, or cant forward at the delivery, to cauſe the ſeeds to ſpread regularly.

As ſoon as the ſeeds are ſowed in either of the above methods of ſowing, let them be directly

directly raked in before the ſurface of the ground is rendered either too dry by the ſun and wind, or made wet by rain if likely to happen; obſerve as below.

But previous to the raking in the Seed ſowed on the ſurface, as above, that if the ground is tolerably light and dry, and a dry ſeaſon, it is of importance immediately after ſowing to tread them in evenly by treading the ground all over regularly with the feet, it being more particularly neceſſary in light looſe ground in the Broad-caſt Sowing all over the ſurface, in one continued plat, which not only ſettles the Seeds, ſo as to be more effectually buried all an eligible regular depth in the raking, but alſo ſettles the ground evenly in every part, as that when we ſtand thereon to rake in the Seeds, the feet will not ſink in holes, as would be the caſe at every ſtep in light ground, if not previouſly trodden; it alſo prevents the drought of the ſpring from penetrating too freely: but, indeed, if the ground is laid out in beds, we may either tread in the Seed or not, as we may readily ſtand in the alleys to rake them in without trampling the beds, which, in wettiſh ground in particular, may be the more eligible practice; however, even in the ſowing in beds immediately on the ſurface, as above, in light looſe ſoils, with a dry ſurface and dry ſeaſon, it is eligible enough to tread in the Seed, previous to raking the ground after ſowing; which work of treading in the Seeds, in both the above methods of ſowing, is performed with the feet nearly cloſe together, taking ſhort regular ſteps, treading the ſurface lightly all over, once in a place, with but ſmall ſpaces between the ſteppings.

Directly after the treading in the Seeds, as above, let the ground be regularly raked over to cover all the ſeeds effectually a proper depth, uſing a large wide-teethed rake for this purpoſe (ſee RAKE); being careful to rake very regularly, not to draw the earth and Seed in heaps, raking only once or twice in a place, which is generally ſufficient, eſpecially where the Seed has been previouſly trodden down in the above manner; taking care, however, to perform it ſo effectually as to bury all the Seeds properly: and as you advance in the raking, trim off lightly all large ſtones and rubbiſh.

Obſerving ſome Seeds require to be raked in as lightly as poſſible, ſuch as all the very ſmall Seeds; others require to be a quarter or half an inch deep, others a whole inch or more, ſo uſe ſmaller or larger rakes accordingly. See RAKE.

The above methods of Broad-caſt Sowing and raking in, may be practiſed to numerous ſorts of Seeds, particularly the greater part of the eſculents of the kitchen-garden: numerous flower ſeeds and others, as is generally hinted in their culture, and, being the moſt ready and expeditious mode of Sowing, is proper for general practice, eſpecially in extenſive grounds, except for ſome particular ſorts of Seeds that require to be ſowed either in drills or by bedding in, as directed below, which is particularized in treating of the reſpective plants in their proper places.

But in many of the extenſive kitchen-gardens in the vicinity of London, &c. where they ſow large tracts of ground at once, inſtead of raking in the Seed ſowed in the Broad-caſt way immediately on the ſurface, they, for the ſake of expedition and cheapneſs, have light ſhort-tined harrows to draw with men, with which they harrow in the Seeds; and ſometimes they afterwards roll the ground with a light wooden roller to cloſe and ſmooth the ſurface, in order to cover the ſeeds more effectually, performing it when the ſurface is a little dried ſo as not to adhere to the roller.

And in the large garden-farms in fields, where they commonly plow and harrow the ground for the reception of ſeeds, they practiſe only the broad-caſt Sowing in continued tracts for almoſt all their eſculent ſeeds, except for peas, beans, and kidney-beans, and not generally beſtow the work of treading down the ſeeds as before mentioned; but the ground being prepared by ploughing, and afterwards rough-harrowed, to ſmooth the ſurface moderately, the ſeeds are then ſowed broad-caſt, in the ſpreading open-handed manner, and then harrowed in either with a light horſe-harrow, or harrowed in with men for particular crops; then roll the ſurface afterwards with a wooden roller drawn alſo by horſes, &c. to ſmooth the ſurface, as aforeſaid.

DRILL SOWING.—This method of Sowing is neceſſary for many ſorts of ſeeds, both eſculents, flowers, and tree and ſhrub kinds in the nurſery, both for the plants to remain where ſowed, and for tranſplantation, and is performed by drawing drills with an hoe, from a quarter or half an inch, to

two

two or three inches deep, according to the ſizes and ſorts of ſeeds, which being ſowed evenly along the bottom of the drill, the earth is drawn evenly over them with a hoe or rake, the depths as above, and the ſurface lightly raked ſmooth.

As to the ſorts of ſeeds that may be ſowed in drills, numerous ſorts may with propriety be ſowed in that method, but is particularly eligible for many large kinds, ſuch as peas, kidney-beans; and many large kinds of tree and ſhrub ſeeds, nuts and berries; it being not only the moſt ready method of committing thoſe large ſeeds to the ground the proper depth; but being ſowed in rows at a diſtance, beſt ſuits the nature of growth of many ſorts of plants, and their method of culture. Many kinds of ſmall ſeeds are the moſt conveniently ſowed and cultivated in drills, ſuch as ſeveral of the kitchen-garden plants, as parſley, chervil, coriander, all the ſorts of ſmall-ſallading, and ſometimes ſpinach, beet, &c. alſo ſome of the aromatics when deſigned as edgings, ſuch as thyme, ſavory, hyſſop, and the like, which is generally mentioned in treating of their culture; likewiſe many ſorts of flower-ſeeds are the moſt commodiouſly ſowed in drills, both when deſigned for tranſplantation, and ſometimes to remain, as is exhibited under their proper genera: but many of the tree and ſhrub ſeeds, in particular, are the moſt conveniently ſowed in drills, all of which is properly noticed under the genera of the reſpective ſorts.

For by Sowing in Drills to all ſuch plants as admit of it, prove not only an eligible method of ſowing to bury all the ſeeds regularly an equal depth; but the drills being at ſome diſtance from one another, admits the ſun, air, and rains more effectually to the plants, and gives them a greater ſcope of growth, than ſuch as are ſown broad-caſt, or promiſcouſly all over the ſurface, but admits alſo of introducing a hoe between the drills to hoe down weeds and looſen the ſoil, which always proves a moſt beneficial culture.

The method of drill-ſowing is both eaſy and expeditious: in gardens it is performed by drawing the drills with a common drawing-hoe, large or ſmall, in proportion to the ſorts of ſeeds to be ſowed, generally ſetting a line as a guide to draw the drills ſtraight, which, as before obſerved, are drawn of different depths, from a quarter or half an inch to two or three deep, as the ſorts and ſizes of ſeed may require, and at proportionable diſtances, from three or four inches to ſo many feet, according to the nature of the plants; all of which particulars are always noted in the culture of the reſpective ſorts, under their proper heads.

The general method of drawing of drills for the reception of ſeeds, is with a common drawing-hoe, as before noticed, ſometimes with a large hoe, and ſometimes a middling or ſmall hoe, according to the ſize of the drill required, ſize and nature of the ſeeds; drawing the drill ſometimes with the corner of the hoe, eſpecially for larger ſeeds, and ſometimes with the edge of the hoe flat-ways or horizontally; but for large ſeeds, ſuch as peas, kidney-beans, many of the nut kinds, and other large ſeeds both of trees, ſhrubs, and herbaceous plants, require a deep angular drill, drawn with the corner of the hoe, turning the face or edge cloſe to the line, ſo draw the drill along with an angular bottom evenly the depth required, the earth remaining cloſe along the ſide of the drill, ready for turning in again over the ſeeds; but where flat or ſhallow drills are required for ſmaller ſeeds, it may, in many caſes, be more eligible to draw the drill with the hoe flat-ways, holding the edge in a horizontal poſition, as before obſerved, drawing the drill along with a flat bottom evenly the whole width of the hoe the proper depth, ſuitable to the ſorts of ſeeds intended to be ſo ſowed.

Sometimes, when very ſmall drills are required, we draw them with the end of the fingers, or with the end of a ſmall flat ſtick.

Having, however, drawed the drills in either of the above methods, the ſeeds ſhould generally be ſowed and covered in directly, if the ground is dry and in good order; but if the ſoil is wet, eſpecially at an early ſeaſon, it may be proper to ſuffer the drills to lie open expoſed to the ſun and air an hour or two, or more, to dry a little, particularly for tender ſeeds in early ſowings, as juſt above obſerved, ſuch as kidney-beans, &c.

As to the method of ſowing in the drills, it is performed for the general part with a locked or cloſe hand, diſcharging the ſeeds from between the fore-finger and thumb, as before related, ſcattering the ſeeds evenly along the bottom of the drill, ſome ſorts requiring

quiring to be ſowed thinly juſt along the middle, ſuch as in the angular drills drawed corner-ways of the hoe, for peas and many other larger ſeeds; alſo ſometimes for ſmaller ſeeds when intended for edgings; but in the ſhallow flat-bottomed drills it is generally intended for the ſeeds to be ſcattered evenly the whole width of the drill, thicker or thinner according to the nature of growth of their reſpective plants, proper hints of which are generally exhibited in their culture, obſerving to cover in the ſeeds generally as ſoon as ſowed, as already hinted, raking or hoeing the earth evenly over them, juſt the depth of the drills.

Remarking, the work of covering the earth in the drills over the ſeeds may be performed occaſionally both with the rake, hoe, and feet; but the rake or hoe is the moſt eligible for general practice, drawing the earth evenly into the drills a regular depth fully to the depth of the drill, whether deep or ſhallow; however as to peas, kidney-beans, and the like larger ſeeds in large drills at wide diſtances, they are often covered in with the feet, by ſlipping them lightly along each ſide of the drill alternately, turning the earth evenly in over the ſeeds; but generally for all ſmall ſeeds in cloſe drills it is proper to cover in with the rake or hoe, ſometimes uſing the teeth of the rake, and ſometimes the back occaſionally, as it ſhall ſeem moſt convenient; obſerving that as ſoon as the drills are covered in by either of the methods, let the ſurface be lightly trimmed along with the rake to ſmooth it and clear off large ſtones, &c.

In the huſbandry Drill Sowing, the drills are generally drawn with the drill-plow by horſes, which effects that work very expeditiouſly; and for ſome ſeeds is ſo contrived as to draw the drills, ſow the ſeed, and cover them in all at the ſametime.

Bedding-in Sowing.—This is a ſort of broad-caſt Sowing in beds, becauſe the ſeeds are ſowed all over the ſurface, but in a different way from the above mentioned: in this method the ground being digged and formed into four or five-feet-wide beds, with alleys, a ſpade width or more between bed and bed, and the earth being drawn off the top of the bed with a rake or ſpade half an inch or an inch or more deep into the alleys, the ſeed is then ſowed all over the ſurface of the bed; which done, the earth in the alleys is immediately drawn or caſt over the bed again over the ſeeds the ſame depth, and the ſurface raked ſmooth.

This mode of ſowing is often practiſed in the nurſeries, but not very frequently in kitchen-gardens, except in ſome parts of the North; it is not ſo expeditious as the broad-caſt Sowing, but is nevertheleſs very proper for many ſorts of ſmall ſeeds, and many ſorts of the tree and ſhrub kind, being a very regular method of Sowing ſo as to cover all the ſeeds an equal depth, and is performed two or three different ways, ſuch as by rake, by ſpade, and by ſifting.

In performing it by the rake, the ground is digged in the common way, raking the ſurface as you go on, afterwards marking it out into four-feet-wide beds with moderate alleys between bed and bed; then having a large rake, turning the teeth upward, and with the back thereof ſhove the earth evenly from off the ſurface of the bed, a quarter or half an inch, an inch or more deep, as may be required, into the oppoſite alley in a little ridge all the way along; this done, directly ſow the ſeed evenly all over the ſurface of the bed, then directly with the rake turned the right way, teeth downward, proceed to draw the ridge of earth out of the alley over the ſeed, ſtriking the teeth of the rake ſmartly down on the farther ſide of the ridge of earth, and drawing it toward with a kind of jerk, make the earth ſpread evenly over the ſeed quite from one ſide of the bed to the other, proceeding in that manner, drawing one ſtroke after another to the end of the bed; then proceed to the next in the ſame manner, and ſo continue bed and bed till all is finiſhed; then with a light rake gently trim the ſurface ſmooth and clear of ſtones.

In ſome places this method is practiſed almoſt in general in ſowing all ſorts of ſmall ſeeds, and by many preferred as a very eligible method of broad-caſt ſowing, ſo as to cover all the ſeeds evenly an equal depth; it, however, is not near ſo expeditious for large grounds as the common broad-caſt Sowing and raking in.

However, thoſe that are uſed to this method of Sowing rid it off a great pace; ſometimes two or three hands being employed on the ſame work, one ſhoves the earth from off the bed, another follows immediately after with the ſowing, and this followed directly

directly by a third, draws the earth over the ſeed, and ſo proceed bed and bed.

But nearly the ſame method of Sowing is alſo ſometimes performed with the rake and ſpade together, particularly in the nurſeries, when intended to ſow any larger ſeeds a good depth, uſing the rake to ſhove or rake the earth from off the bed, into the alleys; or if it cannot be conveniently performed with the rake a proper depth, it is effected with the ſpade, trimming or paring the earth evenly off the ſurface, half one way, half the other, into the alleys; then ſow the ſeeds all over the ſurface as before, and if they are of the larger berry, nut, or ſtone kind, or any other large ſeed, previous to covering them, preſs or pat them all evenly down into the earth, with the back of the ſpade; and then, either with the rake or ſpade, cover the earth out of the alleys evenly over them; though if it is a deep covering, eſpecially if taken off with the ſpade, it is moſt eligible to uſe the ſame implement in returning it, being careful to ſpread it evenly to cover the ſeeds all equally a proper depth, ſmoothing the ſurface with the rake.

Another method ſometimes practiſed in Bedding-in Sowing any common large ſeeds is, the ground being laid out in beds unraked, the ſeed is ſowed on the ſurface, and with the rake ſtrike it a little into the earth, then with the ſpade pare the alley, and caſt the earth evenly over the bed, half an inch, or an inch or more deep, as may be required, and rake the ſurface even. This is alſo ſometimes deſignedly practiſed in wettiſh ground, at an early ſeaſon, when it does not readily admit of treading or raking. And by deepening the alleys, and raiſing the beds, it drains the moiſture from the ſurface.

The method of Bedding-in Sowing, by ſifting, as formerly mentioned, is ſometimes practiſed for very ſmall or light ſeeds of a more delicate nature, that require a very light covering of earth when ſowed. So in order to bury them as ſhallow as poſſible, cover them in, by ſifting fine earth over them out of a wire ſieve. Previous to Sowing ſuch ſeed, the ſurface of the bed, &c. is raked fine; then either ſhove the earth thinly off the ſurface of the bed with the back of the rake into the alley, making the ſurface as ſmooth as poſſible, and then ſow the ſeed, and ſift the earth in the alley evenly over it, ſome very ſmall ſorts only juſt covered, not more than half a quarter or a quarter of an inch deep: or ſometimes the ſurface being only raked as ſmooth as may be, without drawing off the earth as above; and may alſo ſmooth it with the back of the ſpade, then ſow the ſeed, and let ſome fine earth from the alley, or ſome brought for the purpoſe, be ſifted thinly over it, as juſt above-mentioned.

SPADE.

A Spade is the moſt uſeful garden implement for digging, and preparing the ſoil for the reception of all ſorts of ſeeds and plants.

There are ſeveral ſorts and ſizes of ſpades occaſionally uſed, though the common large digging-Spade is, in moſt places, almoſt commonly uſed for all kinds of digging and Spade-work, which however in many inſtances, cannot be ſo conveniently uſed as a middling or ſmall Spade; it is therefore eligible for every good garden to be furniſhed with three different ſizes of Spades, to ſuit every department of gardening the more commodiouſly, ſuch as the common large digging Spade, for all common digging and Spade-work as above obſerved, and a middling, and a ſmall Spade for digging particular narrow compartments, and digging between ſmall plants cloſely placed in beds and borders, &c.—See each as below.

Common digging Spade, &c.—This is deſigned for all common digging, and trenching of ground, and all kinds of ſtrong Spade-work; ſo is of the largeſt ſize, being generally from fourteen to ſixteen inches long in the plate, and nine or ten broad, generally narrowing half an inch, or an inch leſs at the bottom. Though in ſome of the kitchen gardens about London, where the ground is light and deep, they uſe Spades full ſixteen or eighteen inches long in the plate, eſpecially the Batterſea Spades; however, for the general part, a Spade of fourteen or fifteen inches, by nine wide, proves the moſt handy ſize for all common digging in every diſtrict of gardening: but as they are made of different ſizes, from fourteen to ſixteen or eighteen inches long in the plate, as aforeſaid, ſo every one may ſuit himſelf according to the depth and nature of his ſoil, and method of working.

Middling Spade.—Being as to ſize, about a foot long in the plate, and ſeven or eight inches broad; which will prove very uſeful in digging any narrow compartments, and

between narrow rows of ſmall plants; alſo in flower beds, and borders; likewiſe in ſtirring, and freſh earthing the ſurface of beds occaſionally, between cloſe-placed plants of long ſtanding: planting and tranſplanting many ſorts, both in the ground, and in pots, and for many other ſorts of light Spade-work.

Small Spade.—The ſize ten or twelve inches long in the plate, and five or ſix wide, and is convenient in pointing up or ſlight digging, and freſh earthing the ſurface, between cloſe rows of ſmall plants, in beds and borders, &c. where none of the two former Spades can be readily introduced; likewiſe is uſeful in planting and potting many ſorts of ſmall plants, taking up ſmall roots, and other light purpoſes occaſionally.

Proper garden Spades have the plate wholly of iron, not above a quarter of an inch thick upward, growing gradually thinner from the middle downward; the tree or handle being generally of aſh, about two feet, and a half long, and an inch and half thick, with a firm open handle at top, formed out of the ſolid wood, juſt big enough to admit of taking ready hold, one hand at top, and the other below.

Semicircular, or ſcooped Spade.—Beſides the three ſorts of Spades above mentioned, there is alſo another ſort, having the plate made ſemicircular like a ſcooped garden-trowel, and is very uſeful in taking up plants with balls of earth, to preſerve the ball more firmly about the roots.

All the ſorts of Spades are ſold by moſt of the nurſery and ſeedſmen, and by the ironmongers; the prices being according to the ſizes, from five ſhillings to half a crown; the common digging Spades generally from four to five ſhillings, the middling ſize ones three ſhillings and ſix-pence, and the ſmall ſpades half a crown, or three ſhillings; ſo that the whole price of a ſet of ſpades is but trifling.

SPADICEUS *flos*, from *ſpadix*, a flower, or an aggregate of flowers, produced on that particular receptacle called a *ſpadix*, which is protruded from a ſort of calix called a *ſpatha* or ſheath, as in *Narciſſus*, *Amaryllis*, ſnow-drop, &c. See SPADIX, SPATHA, and SPATHACÆ.

Many of the bulbous and tuberous rooted tribe, produce Spadiceous Flowers, the principal of which are, *Amaryllis*, or lily daffodil, Guernſey lily, &c.—*Allium*, garlick, onion, leek, &c.—*Crocus*, all the varieties. —*Colchicum*, meadow ſaffron. — *Narciſſus*, daffodil; jonquils, &c —*Galanthus*, ſnow-drop. — *Leucojum*, greater ſnow-drop. — *Arum*, wake-robin, &c.—*Calla*, Æthiopian Arum.—*Orchis*, fool-ſtones, &c.—*Satyrium*, bee-flower.—*Ophrys*, twy-blade — *Dracontium*, dragon-plant. — *Hæmanthus*, blood flower. — *Crinum*, Aſphodel lily.— *Pancratium*, ſea-daffodil, &c. all of which are perennials, ſending up ſtalks annually, terminated at top by that kind of calix denominated a *ſpatha*, encloſing a *ſpadix* of flowers, and after obtaining a certain growth, the ſpatha or ſheath burſts open, and protrudes the ſpadix, ſupporting ſometimes but one or few flowers, and ſometimes many. See SPADIX.

Moſt of theſe plants are nearly allied, in habit and ſtructure, to the liliaceous tribe; diſtinguiſhed however, from that tribe of plants by their ſpatha or ſcabbard, out of which the ſpadix of flowers is protruded; the liliaceous kinds having no ſpatha, nor any other calix whatever.

SPADIX.

The particular receptacle and pedicles of ſpadiceous or ſpathaceous flowers above deſcribed, being protruded out of that kind of calix called a *ſpatha*; and ſuſtains from one to many flowers, as in *Narciſſus*, &c. See SPATHA.

The *Spadix* was originally applied to palms only, but it is now extended to all receptacles and pedicles of flowers, whether ſingle or aggregate, that have a *ſpatha* or ſheath for their calix; which kind of calix being in form of a ſheath or ſcabbard, burſts lengthways and protrudes the Spadix. See SPATHA.

SPARTIUM, Broom.

Conſiſts of ſhrubby flexible plants, of the deciduous tribe, both hardy and tender, for diverſifying the pleaſure-ground, and greenhouſe collections; all of upright moderate growth, with long ruſh-like ſhoots, thinly garniſhed with trifoliate, and ſingle ſpear-ſhaped leaves, and numerous papilionaceous flowers.

Claſs and order, *Diadelphia Decandria*.

*Characters.*] CALIX is monophyllous, tubulous, heart-ſhaped, with a ſhort margin, having five ſmall denticles.—COROLLA, is papilionaceous, with five petals, conſiſting of a large obcordated, wholly reflected vexillum, two oblong oval wings ſhorter than the ſtandard;

ſtandard, annexed to the filaments, and a dipetalous, oblong, hairy carina, inſerted alſo in the ſtamina.—STAMINA, ten unequal, diadelphous filaments, with oblong antheræ.—PISTILLUM, an oblong hairy germen, awl-ſhaped, riſing ſtyle, having an oblong hairy ſtigma.—PERICARPIUM, a long, cylindric, obtuſe, bivalvous, unilocular pod, containing roundiſh ſeeds.

There are about ten ſpecies in this genus, all of ſhrubby growth; the firſt of which grows wild abundantly in England, &c. all the others are exotics, chiefly from Spain, Portugal, Italy, and other ſouthern parts of Europe, and the Levant; about ſix or ſeven ſpecies are retained in our gardens for variety and ornament, in the ſhrubbery and green-houſe collection. Some of them being very hardy, others ſomewhat tender, requiring ſhelter of a green-houſe in ſevere winters.

*Hardy Kinds.*

About three or four ſpecies are hardier than the reſt, and ſucceed in the open ground in all weathers the year round: the firſt of which is our common Engliſh Broom, and the others are originally from abroad, the countries above-mentioned.

[1]SPARTIUM *Scoparium.*

*Common Sweeping Beſom Broom.*] Riſes with a ſhrubby flexible ſtem, and numerous, angular, ſmooth, green, flexible branches, five or ſix feet high; ternate and ſingle leaves; and numerous bright-yellow flowers all along the ſides of the young branches in May and June, ſucceeded by plenty of ripe ſeed in Autumn.

This plant grows wild in ſterile grounds in England, and moſt parts of Europe, and not very commonly admitted into gardens, only in ſome extenſive ſhrubberies, for the variety of its ſingular growth, and conſpicuous bloom of flowers. In the country it being made into beſoms, thence denominated Brooms; hence the name *Spartium Scoparium*, Sweeping Broom.

[2]SPARTIUM *Junceum.*

*Ruſhy Spartium, or Common Yellow Spaniſh Broom.*] Riſes with a ſhrubby ſtem, and taper, oppoſite, flexible, ruſh-like, green branches, eight or ten feet high; ſmall lanceolate leaves; and the tops of the branches floriferous, being terminated by looſe ſpikes of large yellow flowers, from July till September, ſucceeded by plenty of ſeeds in autumn.

*Variety.*] Double-flowered Spaniſh Broom; producing large full double-flowers, but no ſeed.

[3]SPARTIUM *Radiatum.*

*Radiated, or Starry Italian Broom.*] Grows two or three feet high, with numerous angular oppoſite branches all around, aſſuming a buſhy growth; ternate, linear, cloſe-ſitting, oppoſite leaves, having the folioles ſpreading round the ſtalks in a radius; and cluſters of yellow flowers at the ends of the branches, appearing in June and July.

Of the above three ſpecies, the two latter are the moſt commonly cultivated; having been long reſidents of our ſhrubberies: all three however, ſucceed any where, producing abundance of flowers and ſeed annually; and from the ſcattered, or ſelf-ſowed ſeeds, many young plants often riſe without care, the following ſpring.

*Tenderer Kinds.*

The following ſorts being rather of a more tender nature, eſpecially while young, are often potted, and treated as green-houſe plants; yet they moſtly ſtand our moderately ſharp winters, tolerably in the full ground; it is however, proper to pot ſome for ſhelter in winter, and plant ſome in the full ground in a warm ſituation, to take their chance.

[4]SPARTIUM *Monoſpermum.*

*Monoſpermous, or Single-ſeeded, White Spaniſh Broom.*] Grows ſix or eight feet high, with numerous angular, ruſh-ſhaped, ſilvery branches; ſmall ſpear-ſhaped leaves; and lateral cluſters of white flowers at the ſides of the branches, in July and Auguſt; ſucceeded by pods containing a ſingle ſeed only.

*Variety.*] With yellow flowers.

This ſpecies being moderately hardy, is very commonly planted in the open ſhrubberies, as a hardy flowering ſhrub; it is however, proper to retain ſome alſo in pots, eſpecially while young, to have occaſional ſhelter from ſevere froſt.

[5]SPARTRUM *Spinoſum.*

*Spinous Italian Maritime Broom, or Prickly Cytiſus.*] Grows five or ſix feet high, with angular ſlender branches, armed with ſpines; ternate, thinly-placed leaves, and cluſters of bright-yellow flowers at the ends of the branches, in June and July.

[6]SPARTIUM *Scopius.*

*Scopius, or Spreading Prickly Spaniſh Broom.*] Hath ſpreading ſpinous branches, oval leaves,

and largiſh yellow flowers, in July and Auguſt.

7 SPARTIUM *Angulatum.*

*Angulated Eaſtern Broom.*] Grows ſix or eight feet high, with numerous ſexangular branches, garniſhed with ſingle and ternate leaves; and the tops of the branches floriferous, being terminated by looſe ſpikes of pale-yellow flowers, appearing in July.

All the above ſeven ſpecies of *Spartium*, riſe with ſhrubby durable ſtems and branches, moſtly of a flexible nature, the branches in particular being very ſlender and pliable, producing long ruſhy green ſhoots, generally, however, aſſuming an erect growth; the leaves generally ſmall, and thinly placed, and the flowers moderately large and conſpicuous, all of the papilionaceous or butterfly kind, with five petals, as in the *Characters*, and moſtly of a ſtrong agreeable odour; ſucceeded by long cylindrical leguminous ſeed-pods, ripening in autumn: though ſome of the foreign ſorts do not always ripen plentifully in England, but are obtained in abundance from Spain, Portugal, and countries adjacent.

They all grow naturally in moſt of the ſouthern parts of Europe; and the firſt ſort, *Spartium Scoparium*, alſo in great abundance in this country, in barren uncultivated lands, often proving a moſt troubleſome plant to extirpate in grounds intended for cultivation.

As to the merit of all theſe ſhrubs, in gardening they may be all employed as flowering ſhrubs, or furniture to embelliſh the ſhrubbery compartments; the Common Spaniſh Broom, Radiated, and Monoſpermous kinds, &c. particularly, are the moſt common ſorts in the Engliſh gardens; and the *Spartium Scoparium* is alſo often thinly interſperſed in extenſive ſhrubberies, to encreaſe the variety: but all the ſpecies, both hardy and tenderer kinds, may be exhibited in the ſhrubbery plantations; being careful however, to ſtation the tenderer ſorts in the warmeſt ſituation, to take their chance of all weathers the year round, in common with the hardieſt kinds.

It is, however, alſo proper to have ſome of the tenderer kinds always in pots, to be treated as green-houſe exotics, for the greater certainty of preſerving the ſpecies, in caſe the others in the ſhrubbery ſhould ſuffer by the ſeverity of rigorous winters.

Moſt of theſe plants having long naked or thinly fibrated roots, often inclining to run down with a long tap-root, ſhould generally be planted where they are finally to remain while young, as they do not ſucceed well, if removed when large and old.

They are raiſed in abundance in all th public nurſeries for ſale.

*Method of Propagation, &c.*

They are all propagated by ſeed in the full ground, ſowed in the ſpring of the year; and the double-bloſſomed varieties, &c. by layers and cuttings.

Some of the ſorts ripen plenty of ſeeds in this country, but that of all the ſorts is procured in abundance by the nurſery and ſeedſmen for ſale; which ſhould be ſowed in the beginning of April, in four-feet-wide beds of common earth, either in drills near an inch deep, or bedded in that depth; they will ſoon germinate, and the plants riſe freely in a ſhort time, giving occaſional watering, and weeding all ſummer; and in winter, it is eligible to hoop the beds of the tenderer ſorts, in order to be matted in froſty weather; and in the ſpring following, it is adviſeable to prick out the whole in nurſery-rows, it being proper to remove them out of the ſeed-beds, when but one year old, on account of their tap-root aforeſaid, which ſhould now be ſhortened; then plant them in rows two feet aſunder, and one foot apart in each row; here to remain two or three years, then tranſplanted finally into the ſhrubbery; planting alſo ſome of the ſeedlings of the tenderer kinds, immediately from the ſeed-bed into pots, and placed in the green-houſe in winter.

Obſerve however, in raiſing the tenderer ſorts, that, for the greater certainty of ſucceſs, it will alſo be proper to ſow ſome in pots, plunging them in the ſhade all ſummer; where the plants will come up freely, being careful to remove them under a garden-frame, or green-houſe in winter, to have ſhelter till ſpring, then pot the ſeedlings off ſeparately as above, in order to be managed as hardy green-houſe plants; and in a year or two, having acquired ſtrength, ſome of them may be turned out into the full ground.

By Layers and Cuttings.—The double bloſſomed Spaniſh Broom, and the other varieties, not continuing the ſame from ſeed, muſt be propagated by layers or cuttings, to preſerve the ſorts with certainty. Make the

layers

layers in autumn or ſpring, and plant the cuttings in ſpring or ſummer, ſome in the full ground, others in pots, and plunged in a hot-bed to forward their rooting.

SPATHA, a Sheath.

Being the common calix of the ſpadiceous flowers; and which, being in form of a ſheath or ſcabbard, burſts open on one ſide, longitudinally, from bottom to top, and protrudes the *ſpadix*, a ſort of receptacle and pedicles ſuſtaining the flowers, conſiſting ſometimes of but one, and ſometimes of many florets. — See SPADICEUS *Flos*, and SPADIX.

Examples of the Spathaceous plants are *Narciſſus*, *Amaryllis*, *Galanthus*, and *Crocus*, &c.—See SPADICEUS *Flos*.

The *Spatha* always terminates the main flower-ſtalk, is moſtly of an oblong form, and ſometimes globular, as in onion and leek, &c. cloſely incloſing the *ſpadix*, till the flower acquires maturity enough to burſt it open, and conſiſts either of one piece, as in the greater number of ſpathaceous plants; of two, as in ſome few ſorts; or of a number of ſcales placed imbrication, as in the plantain-tree.

SPATHACEÆ *Planta*, (from *ſpatha*, a ſheath).

Spathaceous plants, ſuch whoſe flowers are protuded from a *ſpatha* or ſheath. See SPATHA.

SPAWN, a progeny or off-ſpring.

In gardening, is often applied to ſuch ſmall off-ſets, ſuckers, and ſprouts that riſe numerouſly from the roots, &c. of certain plants, ſerving for the purpoſe of propagation.

Therefore this ſmall Spawn, or off ſpring of vegetables, may be conſidered as parts ſimilar to the whole plant, as that being ſeparated from the parent vegetable, and planted, they readily grow, and commence proper plants, and thereby renew or propagate their reſpective ſpecies with great facility and abundance.

But Spawn among gardeners, in the general acceptation, is more peculiarly applied to the progeny of muſhrooms, being an off-ſpring from the root of thoſe *fungi*, conſiſting of minute white parts, ſhooting and running in the earth or dung, like ſmall white, thready fibres, aſſuming the appearance of long white ſtrings, productive of numerous minute white knobs, appearing at firſt the ſize of ſmall pin-heads, the whole ſmelling ſtrong of the muſhroom; and thoſe little knobs being infant plants, they gradually increaſe in volume to proper muſhrooms, which are quick of growth, and of very ſhort duration; but the ſame Spawn running in the earth, &c. furniſhes a plentiful ſupply of muſhrooms from the bottom in regular ſucceſſion, for a conſiderable time, ſometimes for ſeveral months.

So that muſhrooms propagate in great abundance by this Spawn detached from the root; and is the only method of propagation yet diſcovered, for raiſing them by the progreſs of horticulture; for the lumps of ſpawny earth or dung being planted in a ſort of hot-bed of horſe-dung, the ſpawn ſoon vegetates, and increaſes conſiderably, furniſhing muſhrooms in a ſhort time fit to gather; theſe hot-beds in which we depoſit the muſhroom, being always made with new horſe-dung from the ſtables, previouſly fermented in a heap, to evaporate the firſt violent heat, then formed in a long narrow ridge five feet wide and four high, like the roof of an houſe to ſhoot off the wet; and having remained open, and expoſed to the weather two or three weeks, till the great heat abates, the lumps of Spawn are planted all over every part of the bed at little diſtances, juſt within the ſurface; and the bed is then earthed all over an inch or two thick, and cloſely covered a foot thick, with dry litter; thus the moderate heat and peculiar quality of the dung, ſets the Spawn a-working, ſo as often to produce plenty of muſhrooms in ſix or eight weeks: and the ſame bed frequently continues furniſhing a ſupply five or ſix months, or longer; but new beds muſt be made every year or oftner; and the old ones pulled to pieces, ſaving all the good freſh Spawn thereof, for ſpawning future beds.—See AGARICUS *Campeſtris* in the *Addenda*.

Thus, through the effects of the peculiar warmth and quality of horſe ſtable-dung, the litter, and plenty of the ſhort ſtuff together, formed into a hot-bed as above, the muſhroom Spawn encreaſes, furniſhing both muſhrooms, and a plentiful ſupply of young Spawn for future beds: likewiſe any common horſe-dung hot-beds, horſe-dunghills, &c. moderately rotted, is often productive of a great deal of good muſhroom Spawn naturally; probably from ſome fine ſpawny matter, or the muſhroom ſeed having accidentally

cidentally mixed in the dung or earth, &c. And thus the Spawn produced by either of theſe effects, is the only certain reſource yet known for propagating that ſpecies by art, no ſeed having as yet been ſufficiently diſcovered, by which we can raiſe this plant; but the Spawn from the root, being as it were living fœtuſſes or infant plants, which renew their ſpecies as certainly as ſeed.

However, beſides this Spawn or off-ſpring of the root, the naturaliſts are agreed that muſhrooms have alſo generative organs, and produce flowers and ſeed like other plants, and naturally propagate themſelves alſo by ſeed, as well as by the Spawn; but from the exceeding minuteneſs both of the genital organs and ſeed, and their great obſcurity, or concealed ſituation, they yet remain inviſible; though it is ſuppoſed they are contained in the *lamellæ* or gills of the muſhroom, and which, when full-grown, diſcharges the ſeed upon the adjacent ground, and thence probably ſome is diſſeminated by the winds, &c. to other diſtant ſoils and ſituations adapted to their growth; and penetrating into the earth, grow and become muſhrooms, the roots of which multiply and furniſh proper Spawn alſo for the work of propagation.

But it was long the opinion of many, that muſhrooms never poſſeſſed the power of propagation at all, but ſuppoſed to owe their exiſtence to the putrefaction of earth, dung, &c. which doctrine, however, the modern botaniſts have ſufficiently refuted.

For muſhrooms being proper plants, they, either by Spawn or ſeed, or both, propagate themſelves like other vegetables; and it is probably from the diſſemination of the ſeed, by ſome myſterious progreſs of nature, to peculiar ſoils and ſituations, that we often find both muſhroom Spawn, and muſhrooms growing in obſcure places, where none ever grew before.

By Spawn, however, in particular, it is obvious that muſhrooms propagate themſelves plentifully, and by which, with proper garden culture, we can raiſe abundance of muſhrooms at pleaſure.

Therefore the muſhroom cultivators always furniſh themſelves with a ſufficient quantity of freſh Spawn every year, for every new bed, procuring it all times of the year, but more plentifully towards the end of ſummer, and in autumn, from the places of its growth, ſuch as old muſhroom-beds; any old horſe-dung hot-beds, and horſe-dung-hills, that lay moderately dry, and remained undiſturbed at leaſt half a year, or a year or two; alſo ſometimes in old compoſt heaps, conſiſting chiefly of horſe-dung; in all of which the ſpawny ſubſtance diſcovers itſelf in dry lumps of dung and earth, which lumps ſhould be taken up entire, as hereafter noticed; likewiſe in ſtable-yards, in bye dry corners, where any quantity of horſe-dung has lain dry and undiſturbed any conſiderable time, lumps of Spawn are often obtained. It is alſo found in fine perfection, in the horſe rides belonging to great livery ſtables and horſe-dealers in and about London, &c. which rides being under cover to ſhelter them from wet, and the ground ſpread thick with the ſhort dung from the ſtables for the horſes to tread on, being generally permitted to remain ſome conſiderable time without cleaning out, and being always dry, upon examining towards the ſides next the wall, is frequently found moſt excellent muſhroom. Spawn in large cakes; likewiſe in horſe-mill tracks, where horſes are conſtantly employed in working the mill, and they dunging, &c. in the tracts, it being occaſionally ſwept up towards the ſides, and the bottom ſometimes permitted to lie ſome conſiderable thickneſs a long time, upon turning it up, are frequently found fine lumps of excellent ſtrong Spawn: alſo in kitchen gardens, where any piece of ground having been well dunged in the ſpring, with new or but moderately-rotted ſtable-dung, or old dry hot-bed dung, &c. probably having embryo Spawn already formed therein, and which dungs happening to be but ſlightly digged in, or covered but a moderate depth with earth, ſometimes is productive of cluſters of muſhrooms in patches, towards autumn in dry ſeaſons, and in which places we often find lumps of very good Spawn: remarking, that in all the above places the Spawn is met with occaſionally at all times of the year, but more certain and plentiful towards the end of ſummer, and in autumn, before periſhed by the wet and cold in winter; being found in dry lumps, and cakes of dung and earth, appearing, as before ſaid, white and ſtringy, ſmelling ſtrong of the muſhroom.

I have ſometimes had muſhroom Spawn produced naturally all over the ſurface of an old cucumber, or melon hot-bed in autumn, and

and having continued the frame and lights conſtantly over it all winter long, covering the ſurface of the mould thickly with dry hay in froſty weather, laying alſo dry litter round the outſide of the bed, have, towards ſpring, had a full crop of very fine muſhrooms: in one bed in particular, in which was a fine loamy earth, they were remarkably numerous, large, thick of fleſh, and of firm texture; and after this produce, gathered a fine parcel of Spawn.

But muſhroom Spawn is alſo obtained in rich paſture-grounds towards the end of ſummer, and in autumn, before the rain and cold commences; the months of Auguſt and September being generally the proper ſeaſon when the muſhrooms riſe naturally, ſerving as a direction to the place to find the Spawn; then careſully opening the ground, the Spawn will appear in the earth as above, which may be digged up in lumps, and carried home in baſkets for uſe; this field Spawn however, cannot always be ſo readily obtained in any conſiderable quantity; and as it is found only in paſture-grounds, it may be very inconvenient to break up, and ſpoil the ſward in ſearch of it; beſides, many poiſonous ſorts of *fungi* grow in the fields, alſo from Spawn; we ought to be cautious when we are gathering Spawn for muſhroom beds.

From the above hints of the places of growth of muſhroom Spawn, we may readily know where to obtain it in ſufficient quantity for the purpoſe of ſpawning muſhroom-beds.

But after all, garden or bed Spawn produced in any horſe-dung beds, heaps or lays of horſe-hung, &c. before-mentioned, is preferable to the field Spawn for garden culture, it generally producing much thicker, more fleſhy, and firmer muſhrooms, of a richer flavour.

Therefore, in demoliſhing old muſhroom-beds, it is incumbent on us to preſerve all the lumps of young freſh Spawn, alſo all ſuch we occaſionally meet with in any old dung hot-beds, dunghills, &c. laying the lumps up in the dry till wanted; rejecting however, any very old worn-out Spawn, as far as it can be diſtinguiſhed; and the virgin Spawn, or ſuch that has not been worked, generally yields the fineſt muſhrooms; for ſometimes, even the young off-ſpring Spawn, or ſuch that have been long worked from bed to bed, is apt to degenerate, there being often a very material difference in the goodneſs of Spawn; that which is freſh and full of heart, will often produce abundance of fine muſhrooms for ſeveral months in the ſame bed; but ſuch that is worn-out or degenerated, ſend up only a flaſh of trifling little heads at firſt, of no ſubſtance, and probably never produce any more to ſignify.

There is alſo a fruitful, and barren ſort of muſhroom Spawn; the former is diſtinguiſhed by the ſubſtance of the fibry or ſtringy white ſhoots, &c. and muſhroom-like ſmell, as before obſerved; but in the baſe ſort, the thready fibres are conſiderably more abundant, fine, and downy, often appearing like a fine white down, and being of no ſubſtance, produce only a flaſh of ſmall white *fungi* deſtitute of the fleſhy part, and which by the muſhroom-men is commonly called white-cap; and by not perfectly diſtinguiſhing it, many have been diſappointed in their crop.

It is obſervable that horſe or ſtable-dung, of all others is the moſt remarkable for promoting muſhroom Spawn, even often alone in the dung-heap, without any addition of earth, though having a ſmall portion of any earthy ſubſtance, it may probably have the greater effect; for new horſe-dung conſiſting of the wet litter, and the ſhort ſtuff together from the ſtables, but the more ſhort the better, and being collected in any conſiderable quantity, either in any common cucumber or melon hot-beds, or remaining in the dung-heap a conſiderable time, it often becomes of a certain agreeable temperament, peculiar to the growth of muſhrooms, eſpecially if it does not burn much by the firſt violent heat; and that after remaining from winter or ſpring, until autumn or ſpring following, or longer, it frequently furniſhes lumps of excellent Spawn.

Methods are ſometimes practiſed to obtain Spawn more abundantly by art, by the effects of horſe-dung, both in hot-beds and in compoſt heaps; ſometimes in the former caſe, by planting ſmall pieces of Spawn, or ſpawny earth along the top edge of the later cucumber hot beds in ſummer, or in the ſides of any horſe-dung heaps, having a little warmth remaining; ſo that the moderate heat of the dung in the bed or heap, ſets the

Spawn

Spawn a-running, as ſometimes both to produce a few muſhrooms in autumn, and encreaſe conſiderably for future uſe in ſpawning proper muſhroom beds. And in the ſecond caſe, it is performed by a compoſt of dung and loamy earth together; procuring in ſpring, or early in ſummer, a quantity of freſh horſe-dung, conſiſting of plenty of ſhort ſtuff, and a due proportion of long together; and caſting it together to ferment a fortnight or a month, that the rank burning vapour may paſs away; then having ſome loamy earth, or other good ſubſtantial mould, or any ſpawny ſoil from old beds, form the dung into a long narrow ridge, mixing ſome of the earth occaſionally towards the outſide, and in a fortnight or three weeks, the heat becoming quite moderate, cover the whole with a dry long litter to defend it from the wet, permitting the whole to remain ſome conſiderable time; and thus probably ſome generating ſubſtance of muſhrooms, either Spawn, or ſeed, or both, having by ſome means previouſly, and accidentally introduced itſelf in the compoſt, which by its certain warmth and quality promotes its vegetation, and encreaſe, as ſometimes in three or four months to furniſh a good quantity of eligible Spawn.

Obſerve, in collecting the muſhroom Spawn found occaſionally in all the aforementioned places of growth, the lumps of dung and earth, in which it appears ſhould be taken up as entire as poſſible in a baſket, and carried into ſome dry ſhed or other apartment, there depoſited till wanted; previouſly obſerving, that if the lumps of Spawn are any ways wet or very moiſt, they muſt be ſpread on the floor thinly a week, or fortnight, or more, till thoroughly dry: then may either plant it if the bed is ready, or lay it up cloſe in ſome dry corner of the apartment, or put it up in hampers; covering the whole thickly with dry litter or garden-mats: and here it may remain till wanted, for the purpoſe of ſpawning muſhroom beds; as it will retain its vegetating property ſeveral months: and the drier it is kept in moderation, the better it will improve in its vegetable faculty, and take more freely with the bed when planted.

About London good muſhroom Spawn is a valuable article among the kitchen gardeners, who raiſe great quantities of muſhrooms for the markets; and in conſequence thereof, ſome of their labourers make it their buſineſs, at certain times of the year, but more particularly in ſummer and autumn, to go about to different places collecting it, which generally pays them well for their trouble, as they find a ready ſale for it, from five or ſix to ten ſhillings per buſhel.

Whoſoever may have occaſion to purchaſe Spawn from the environs of London, will meet with it moſt readily in the Neat-houſe gardens near Chelſea; alſo in the neighbourbourhood of Lambeth, Batterſea, Hammerſmith, &c. alſo in Covent-Garden market.

It may be packed up in hampers, and ſent to any diſtance, either by land or water-carriage.

SPICA, a Spike.

A mode of inflorescence, or manner of flowering peculiar to many plants; conſiſting of a ſimple peduncle or flower-ſtalk, ſupporting many flowers all along its ſides, without any pedicle or partial foot ſtalk, but are ſeſſile, or ſet cloſe to the main ſtalk, generally in alternate arrangement.

But the florets of a Spike are alſo ſometimes ſingle rowed, and ſometimes double-rowed, &c.—When ſingle rowed (*Spica ſecunda*) the flowers are all turned towards one ſide; and double-rowed (*Spica diſticha*) when they ſtand two ways.

SPINA, a Spine or Thorn.

One of the armature of plants, and are protruded immediately from the wood, being an expanſion of the ligneous body; by ſome compared to the horns of animals, which adhere to the bones of the ſkull, ſo that the Spine or Thorn differ from the prickle, *aculeus*, which are detached only from the bark, and not ſo ſtrong and hard as Spines. See ACULEUS.

Spines are intended by nature as armour to certain plants, to keep off cattle and *other* animals that would injure them.

Thorns ariſe either upon the ſtem and branches, as in buckthorn, box-thorn, white-thorn, ſloe, wild plum, pear, orange, triple-thorned acacia, falſe-acacia, furze, and many others of the tree and ſhrub-kind; or on the leaves, as in holly, American aloe, acanthus, thiſtle, Adam's-needle, juniper, butcher's-broom, &c. On the calix, as in ſhiſtle, centaury and mud-apple; or on the ſeed-veſſel and fruit, as in thorn-apple, prickly ſpinach, &c.

Spines riſe either ſingly, as in moſt ſpinous plants; doubly or by pairs, as in many ſorts; and triple, as in the three-horned acacia.

By

By culture many plants loſe their Spines, as plum, pear, medlar, orange, citron, &c. and the leaves of holly by age.

SPINACIA, Spinach.

Spinach is a noted culinary herb of the annual tribe; valuable as an eſculent for its large leaves for various culinary purpoſes moſt times of the year; having broad triangular and roundiſh leaves, riſing in cluſters cloſe to the ground; ſucceeded by upright tall ſtems, ſupporting ſpikes and cluſters of ſmall apetalous male and female flowers on ſeparate plants.

Claſs and order, *Dioecia Pentandria.*

*Characters.*] CALIX, dioecious flowers, having in the males a calix, cut into five oblong, obtuſe, concave ſegments; and in the females is monophyllous and permanent, cut into four acute parts, two of them being very ſmall.—COROLLA, no petals.—STAMINA, five capillary filaments, with oblong didymous antheræ.—PISTILLUM, in the females a roundiſh compreſſed germen, and four hair-like ſtyles with ſimple ſtigmas. PERICARPIUM, no ſeed-veſſel; the ſeed is roundiſh, and lodged in the permanent calix, and is either thorny or ſmooth in the different varieties.

There are but two ſpecies in this genus, one of which only is cultivated, being the common culinary Spinach, comprehending two eminent varieties; namely,—triangular leaved, with prickly ſeed,—round-leaved, with ſmooth ſeed: the former being the hardieſt, is more valued for the winter crop; but the latter having larger, thicker, and more ſucculent leaves, is preferable for ſpring and ſummer.

The ſpecies is,

SPINACIA *Oleracea.*

*Oleraceous, or Common Culinary Spinach.*] Hath a ſomewhat ſpindly fibrous-root, crowned with a tuft of large, broad, triangular, and roundiſh leaves on foot-ſtalks, cloſe to the ground; and when it ſhoots for ſeed, riſes with upright, hollow branchy ſtalks three feet high, producing ſpikes, and cluſters of numerous ſmall, apetalous, greeniſh flowers, male and female, on ſeparate plants; ſucceeded in the females by roundiſh cloſe-ſitting ſeeds, in ſome armed with ſpines, in others ſmooth.

Remarking, the male plants generally produce their flowers in ſpikes, and the females in cloſe cluſters at every joint.

*Varieties.*] There are two remarkable varieties of this ſpecies, each of which was formerly conſidered as a diſtinct ſpecies; but the improved Linnæan ſyſtem makes them varieties of one and the ſame ſpecies, their ſpecific determination being in the cloſe-ſitting ſeeds, *fructibus ſeſſilibus*, which is exactly the ſame in both varieties; there is however, a pretty permanent diſtinction in their leaves and ſeed; one variety having triangular arrow-pointed leaves, and prickly ſeed; the other having roundiſh leaves and ſmooth ſeed, as below.

*Triangular Spinach with Prickly Seed.*] Hath large triangular arrow-pointed leaves, five or ſix inches long or more, being broad and angular each way at the baſe, running up to a narrow point at top; and the ſeeds are moſtly armed more or leſs with ſhort ſpines.

*Round Spinach with Smooth Seed.*] Hath large roundiſh or oval leaves, five or ſix inches broad or more, of a more thick, fleſhy, ſucculent conſiſtence; and the ſeeds more round, moſtly free from ſpines, and quite ſmooth.

Both theſe varieties admit of ſome variations in the ſhape and ſize of the leaves; the broadeſt and thickeſt leaved ſorts are conſequently ſuperior in goodneſs; remarking of the Round Spinach in particular, ſome will have roundiſh leaves, others oval or oblong, and one ſort exhibits itſelf with much rounder, broader, and thicker leaves than the others, generally of a more ſtocky and luxuriant growth, and ſtronger green colour, and is the moſt valuable variety of the round-leaved kind: but obſerving both of the triangular and round-leaved varieties, we ſhould endeavour as much as poſſible, to mark the moſt ſtocky and broad-leaved plants to run up for ſeed, in order to obtain and continue the proper breed of ſuch eligible varieties only, ſufficiently for general culture.

As to the merit of each variety;—the triangular Spinach being of a more hardy nature, is generally cultivated for the main winter crops; and the round-leaved ſort claims precedence for the ſize and thick conſiſtence of its leaves, but being not quite ſo hardy as the other, it is cultivated principally for the ſpring and ſummer crops.

Both the varieties are herbaceous annuals, that ſucceed in the open ground, requiring to be raiſed annually from ſeed ſowed in an

open ſituation, in ſpring, ſummer, and autumn, to remain when ſowed; and the plants coming up in a fortnight, they attain perfection for uſe in two or three months, then run up to ſtalk, producing flowers and ſeed, and totally decay, root and all, the ſame year; though if ſowed in autumn, they come up and ſtand the winter till next ſpring, but not longer than April or May, before they run to ſeed, and periſh as ſoon as it is ripe.

They commonly flower in June, and when in flower, the male and female plants are then diſtinguiſhable, the former generally producing the flowers in ſpikes, having the flowers furniſhed with the ſtamina, ſuſtaining a yellow farina, being the male duſt for the impregnation of the flowers of the female plants, which have no ſtamina, only the female organs, the germen and ſtyles, on which the male plants naturally diſcharge their farina, and ſoon after after decay; but the female plants continuing their growth, and being thus fecundated, the embryo ſeeds grow faſt to perfection, being alſo thereby fertilized or rendered prolific, as that when ſowed they will readily grow, for without the vicinity of the male-flowers, many of the females would prove abortive, and all the ſeeds ſterile, which determines how neceſſary it is in Spinach, and other dioecious plants, to leave a ſufficiency of the males to impregnate the females.

Spinach is obtained for uſe almoſt the year round by different ſowings, from January till Auguſt or September; at about a month's interval between the early ſowings, two or three weeks in the main ſpring crops, and not more than a fortnight in ſummer; for the plants of each crop of the ſpring and ſummer ſowings will not continue longer for uſe, before they will fly up to ſeed; but the autumn ſowings, performed from about the middle or latter end of July, to the middle or end of Auguſt, do not run ſo ſoon, more eſpecially thoſe ſowed in Auguſt, which is the only proper ſeaſon for ſowing the winter crops, and which coming in for uſe in October, continue all winter and ſpring, until May, then ſhoot up to ſeed; being ſucceeded abundantly by the ſpring-ſowed crops, as above.

As to the culture of Spinach it is very eaſy: both the varieties may be raiſed in any ſituation from ſeed, ſowed either broad-caſt and raked in, or in drills; the plants remaining where raiſed, require only a little thinning and clearing from weeds; however, there being ſeveral material hints neceſſary to be generally known, in order to obtain Spinach in full perfection in the different ſeaſons of the year, we will therefore treat of its culture pretty fully; firſt exhibiting hints for its general culture, afterwards the culture of each variety, ſeparately in the different ſeaſons.

### *Hints of its Propagation and General Culture.*

The propagation of Spinach is effected only by ſeed, as being an annual, ſowing it every year in ſpring and autumn; the former ſeaſon of ſowing furniſhing the main-ſpring and ſummer-crops; and the autumn ſowings in Auguſt furniſhes Spinach all winter, and for early ſpring uſe, until May.

It may be ſowed at ſeveral intervals of time, from January till Auguſt, as every month, three weeks, and fortnight, according to the earlineſs or advanced period of the ſeaſon, ſo as to obtain a regular ſucceſſion of Spinach moſt part of the year; the ſpring and ſummer ſowings attaining perfection for uſe from April till Auguſt or September, and run to ſeed, and totally periſh the ſame year; but the autumn ſowings in Auguſt being deſigned not to come in for uſe till October, in order that it may remain all winter, and the following ſpring, until ſucceeded by the ſpring-ſowed crops, as before remarked.

Obſerve of the ſpring ſowings, that as the very early ſowings in January run ſoon to ſeed, ſhould ſow but a moderate quantity; but may ſow freely in February, March, and April, every three weeks, for the main-ſpring crops, which will ſupply plenty of young Spinach in great perfection, from April or May, till towards midſummer.

But if Spinach is required throughout the ſummer, continue the ſowings every fortnight, all May, June, and July; though the ſummer-ſowed Spinach rarely attains full perfection, like the ſpring ſowings, as it runs haſtily up to ſeed; but ſhould ſow frequent, and but little at a time.

And as to the autumn ſowings, as the plants do not run the ſame year, ſhould always ſow a good full crop to ſtand for winter, and early ſpring uſe, as aforeſaid.

With

With reſpect to the ſoil and ſituation for the culture of Spinach, it ſucceeds in any common ſoil of a kitchen-garden, but the richer in dung the better; for a well enriched ſoil makes great difference in the growth of Spinach, by exhibiting the plants of a luxuriant growth, in reſpect to ſize and thick conſiſtence of the leaves, a material excellence to be regarded in Spinach; always chuſing an open ſituation, not too near low-ſpreading trees, &c. for Spinach never ſucceeds in cloſe or ſhady places, in which it always draws up weak, and ſoon runs to ſeed, without attaining perfection; but having a free expoſure open to the ſun and air, encourages a ſtocky growth, and large expanſion of its leaves. A warm border may be proper for the early crops, but for the main crops in general, the open quarters is the moſt eligible; though a broad warm-lying border may alſo be proper for ſome part of the later ſowed winter-crops occaſionally, for the ſake of having the advantage of a little ſhelter of the fence, and benefit of the ſun during the winter ſeaſon.

Let freſh ſeed not more than a year old be procured for each ſowing, for this will be found of much importance in the free growth of the plants; and for the autumn ſowings of the winter crops, it is of advantage to procure new ſeed of the ſame year's ſaving, if poſſible.

The ground being digged, the ſeed may either be ſowed broad-caſt and raked in, or in ſhallow drills a-foot aſunder; though broad-caſt is the moſt expeditious, and probably the moſt eligible method for the growth of the crop; ſowing it all over the ſurface moderately thin, either in one continued plat, and trodden down evenly, if light ground, and raked or harrowed-in with a large rake, or light harrow; or may divide the ground into four or five-feet-wide beds, with foot-wide alleys between; more eſpecially for the early and winter crops in wet ground, and the ſeeds being ſowed as above, rake them in evenly: but drill-ſowing may alſo be occaſionally practiſed, drawing the drills with an hoe flatways, near an inch deep, and ten or twelve inches aſunder, ſcattering the ſeeds thinly along the drills, and rake the earth over, full half an inch deep, which mode of ſowing Spinach may be more particularly eligible, when obliged to ſow between other crops; it alſo more readily admits of hoeing up the weeds between the rows; and if ſowed thin, and the plants alſo thinned proportionably, they will grow as large and fine as in the other method of ſowing, and the produce very conveniently gathered; ſo that drill-ſowing of Spinach, the ſpring-crops particularly, may alſo be effected occaſionally, between other crops already growing in rows; as beans, cabbage, cauliflowers, &c. and may likewiſe be ſowed in wide drills alone; i. e. the rows a yard aſunder, to admit of intercropping in the intervals with rows of cabbages, beans, and other things occaſionally: however, the broad-caſt ſowing being the moſt ready and expeditious, and generally alſo the moſt advantageous for making the moſt of the ground when neceſſary, is the moſt commonly adopted method of ſowing Spinach, for large tracts of ground eſpecially. See SOWING of SEEDS.

Obſerve, in either of theſe methods of ſowing Spinach, to ſcatter the ſeeds moderately thin, as the plants at any rate require to be thinned to three or four inches diſtance at leaſt; do not however ſpare ſeed in a moderate way, and let it be directly raked or harrowed in, previouſly obſerving of that ſowed broad-caſt all over the ſurface, if in light looſe land particularly, it may be proper firſt to tread the ſeed evenly down, then rake it effectually with a large rake; and of that ſowed in drills, rake the earth evenly over it the depth aforeſaid, and rake the ſurface ſmooth.

Theſe ſeeds quickly germinate, and the plants will come up in a fortnight, or perhaps, if ſowed very early in ſpring, it will be three weeks or a month before they come up.

Obſerving however, in reſpect to their culture, that when the plants have three or four leaves an inch broad, they ſhould be thinned and cleared from weeds, performed either by hoe or hand, but the former is the moſt eligible; chuſing dry weather, and cut out the plants to three or four inches diſtance, together with all the weeds in every part; the above diſtance however, is ſcarcely ſufficient, unleſs intended to begin thinning out the plants for uſe while young, otherwiſe it is adviſeable to hoe them out ſix or eight inches aſunder; eſpecially the ſpring and ſummer crops of the round Spinach, which having proper room, will grow very

large, and ſpread its broad leaves widely around, and will not run to ſeed ſo ſoon as if left cloſe; for the ſpring and ſummer-ſowed Spinach in particular, if left too cloſe, draw up weak and trifling, and ſoon go to ſeed: but as to the winter crops of triangular or prickly Spinach, if thinned finally to four or five inches diſtance will be ſufficient. See their *Spring*, *Summer*, and *Winter Culture*, under ſeparate heads.

Spinach is often ſowed with other crops, for the ſake of cropping the ground to the beſt advantage when neceſſary; for a full crop of Spinach requires a large ſpace of ground, ſo as to furniſh any ſufficient quantity at each gathering; yet as being plants of low growth, and a temporary crop ſoon acquiring perfection, and each crop ſoon cleared off the ground for uſe, moſt of the London kitchen-gardeners and many others, who find it their intereſt in having as many crops from every ſpot of ground as poſſible, generally, to ſave ground, contrive to ſow the main ſpring crops of Spinach moſtly with ſuch other crops as admit of its growth without retarding or injuring one another, and grow to perfection in ſucceſſive order, out of one another's way; ſuch as with radiſhes and lettuce; and between rows of cabbages, cauliflowers, beans, and ſome other eſculents in wide rows, mixing nearly an equal quantity of the ſpinach and radiſhes, and only a ſmall ſprinkling of coſs-lettuce; ſowing the whole together broad-caſt, and rake them in; the radiſhes take the ſtart of the others, arriving to perfection before the Spinach, being then daily thinned out for uſe; and the lettuces are tranſplanted while young into another place, leaving the ground at laſt occupied only by the Spinach; unleſs the ground was alſo cropped with cabbages and cauliflowers, as is often practiſed.

For it is alſo cuſtomary among the kitchen-gardeners, in order to make the moſt of the ground, to ſow the main crops of ſpring Spinach and radiſhes, in February, March, and April, in the open quarters, where the general crops of cabbage and cauliflowers are intended; generally ſowing the Spinach and radiſhes firſt by broad-caſt all over the ground, and rake or harrow them in; then either directly, or in a week, fortnight, or a month after, as it ſuits, plant the cabbages and cauliflowers in rows at proper diſtances, as directed under their proper heads. See BRASSICA. They will ſoon take root, and get the ſtart of the Spinach and radiſhes, without retarding their growth; and the two latter will be all gathered off for uſe, by the end of May, and beginning and middle of June; when the ground is hoed to cut up weeds, looſen the ſoil, and draw up earth to the ſtems of the cauliflowers and cabbage-plants.

But the above methods of ſowing Spinach with other crops, is only recommended for occaſional practice in the aforementioned caſes; for in gardens where they are not neceſſitated to make the greateſt advantage of the ground, it may be more adviſeable to ſow the main crops moſtly alone, without the incumbrance of other crops; in which the Spinach will moſt likely attain the greater perfection: in this however, every one will ſuit his own convenience.

When the plants have leaves two or three inches broad, may begin thinning out ſome for uſe.

As to the method of gathering Spinach for uſe, it may either be cut up with a knife wholly to the bottom, if it wants thinning; or only crop the large outer-leaves, the root and heart remaining, ſhoots out again.

In gathering the ſpring crops however, we may at firſt, if the plants want thinning, cut them up wholly to the root, thinning them out where thickeſt in a gradual manner, ſo as to leave the ſtanding plants at laſt full ſix or eight inches diſtant to grow to perfection, which, when beginning to ſhoot for ſeed, may alſo be cut up wholly to the bottom.

And in gathering the winter crop of Spinach, if the plants ſtand too cloſe at firſt, ſome may be thinned out quite to the bottom; afterwards muſt only crop the larger outer leaves all winter, and early part of the ſpring; but when the ſpring is more advanced, and the plants grown large and require thinning, or when they begin to run to ſeed, may cut them up clean to the bottom.

Having thus exhibited hints for the general culture of Spinach, we now proceed to treat of the culture of each variety ſeparately, in its proper ſeaſon; firſt, the ſpring and ſummer crops; ſecond, the winter crop.

*Spring and Summer Crops.*

The round or ſmooth Spinach being the moſt eligible ſort for the ſpring and ſummer culture,

culture, for the reaſons before obſerved, February, March, and April is the principal months for ſpring-ſowing the main crops thereof; though to obtain a ſucceſſion of this ſpinach as early and late as poſſible, ſeveral ſowings may be performed, from January till Auguſt, as already obſerved.

The firſt ſowings may be performed in the beginning, or any time of January, if the weather is open; or, for the greater chance of ſucceſs, may ſow twice in that month if the weather permits, in a warm dry ſituation; ſowing only a moderate portion at this early ſeaſon, eſpecially in the beginning of the month, as it may be cut off by inclement weather; or if it ſurvives the froſt, the plants are apt to go to ſeed before they acquire their proper growth.

In February however, for the main ſpring crops, may ſow more freely in almoſt any open ſituation, eſpecially towards the middle of the month; it will however, be proper to ſow alſo twice in this month, at two or three weeks interval, which will enſure the greater ſucceſs of plenty in a regular ſucceſſion a long time, to ſucceed the winter crops, which will run to ſeed in April and May, about the time theſe ſowings arrive to the firſt ſtate of maturity for the table.

In March and April, it is alſo adviſeable to continue ſowing the ſame ſort of Spinach every three weeks, in an open ſituation, which will furniſh a regular ſupply for the table or market in May and June.

And in the months of May, June, and July, if a conſtant ſucceſſion is required all ſummer, it is proper to repeat the ſowings almoſt every fortnight during thoſe months, for theſe plants very ſoon ſhoot up for ſeed at this ſeaſon: chuſing for theſe ſummer-crops the ſtrongeſt moiſt ſoil the garden affords in a free ſituation, and if you can have the opportunity of moiſt weather for ſowing, it will be a particular advantage; being careful to ſow the ſeed rather thinner than common: and the plants ſhould alſo be hoed out thinner in proportion, otherwiſe will ſoon draw one another up into ſtalk for ſeed. Obſerving, that if a regular ſucceſſion is required to be extended alſo quite through the autumn, we muſt continue the ſummer ſowings till the middle or latter end of July; and thus we procure a conſtant ſucceſſion till the beginning of winter, or till ſucceeded by the winter crops in October.

With reſpect to the method of ſowing all the above ſpring and ſummer crops of Spinach, it may be principally by broad-caſt and raked in, or occaſionally in drills, as before obſerved in the *General Culture*.

We already obſerved ſome mix radiſh ſeed with the Spinach, in ſowing the main ſpring-crop, for the ſake of cropping the ground more advantageouſly; alſo ſowing it occaſionally on the ground intended for cabbage and cauliflowers, in all of which every one may ſuit his own inclination and convenience, agreeable to the hints before given.

As to the culture of theſe ſpring and ſummer crops of Spinach, it is nearly the ſame as obſerved in the general culture; that when the plants have three or four leaves an inch broad, hoeing them out in dry weather to about three or four inches diſtance, cutting up all weeds; and when they are advanced in growth, ſo as nearly to meet, they will be fit for the table: when they may be thinned out regularly, the largeſt for uſe, cutting them up cloſe within the ground; repeating the thinnings according as they are wanted for the family or market, and thoſe remaining at laſt having full ſcope, will attain great perfection.

After however, all theſe ſpring and ſummer crops attain perfection for uſe, they ſoon ſhoot up ſtalks for ſeed, and become uſeleſs; which renders a repetition of ſeveral ſowings neceſſary.

Some of the beſt plants of the February and March ſowed crops ſhould be left to run up, and produce ſeed for next year's ſowing. See *Saving the Seed*.

### *Winter Crop.*

Winter Spinach is the triangular or prickly ſort, as being the hardieſt, ſowed in the end of July or beginning of Auguſt, and arriving to perfection for uſe the ſame year, in the latter end of September, or in October; and ſtands without running all winter, ſupplying the table all that ſeaſon, and the following ſpring: being however, generally in good perfection all October, November, and December if mild weather, and often in moderate ſeaſons continues growing all winter long; is liable however to ſuffer by ſevere froſt; but the root and heart remaining ſound, it recovers ſtrength apace as the ſpring advances, and ſhoots out into large leaves

leaves abundantly till May, then it ſhoots for ſeed, being ſucceeded by the ſpring-ſowed crop.

It is therefore adviſeable to chuſe principally the triangular or prickly Spinach for this crop, as being the hardieſt to endure the froſt and wet in winter.

The proper ſeaſon for ſowing this crop, is principally the firſt and ſecond week in Auguſt, for if ſowed ſooner, it will get too forward, and be apt to run to ſeed the ſame autumn, or very early in the ſpring; however in cold or poor ſoils, in very expoſed ſituations, it is proper to ſow early in the firſt week of this month, as the forwarding the ſowings a few days in ſuch ſoils and ſituations is of importance, that the crop may get properly forward and obtain ſufficient ſtrength before the approach of winter. But in good rich warm-lying ground, if the ſowing is performed any time in the firſt fortnight of the month, it may be time enough; and in ſome of the rich grounds about London, they often ſow this crop of Spinach in the middle or latter end of this month, eſpecially for the later crop; however, it is moſt adviſeable to ſow the main winter crops rather early in Auguſt, which generally proves a very ſucceſsful ſeaſon in moſt ſituations for ſowing winter Spinach; obſerving, if ſhowery weather happen about this time, it will prove an advantageous opportunity for ſowing, as if ſowed in dry hot weather this ſeed is apt to riſe rather ſparingly and ſtraggling: do not however omit the proper ſowing ſeaſon as above.

Chuſe generally for this crop an open ſituation, that lies tolerably dry in winter, and that enjoys the winter's ſun.

And the ground being properly digged, immediately ſow the ſeed while the ſurface is freſh and moiſt, ſowing it generally by broad-caſt all over the ſurface, either in one continued plat to make the moſt of the ground, or in four or five-feet-wide beds, for the convenience of ſtanding in the alleys to do the neceſſary culture and gather the produce; and may ſcatter a ſprinkling of brown, Dutch, and common cabbage lettuce, &c. along with the Spinach ſeed, to take their chance for culling out in winter and ſpring: directly, as ſoon as ſowed, tread and rake it in evenly. Or the Spinach may be ſowed in drills, either at a foot diſtance for a cloſe crop, or three feet and a half aſunder, to allow of cropping between, in autumn with cabbages, or in winter or ſpring with beans, &c. But it is the cuſtom with moſt of the London gardeners, to plant early cabbages in moſt of their winter Spinach ground, more particularly that ſowed in the broad-caſt way in one continued plat, or that ſowed in wide-placed drills, planting the cabbage-plants generally in October, in rows three feet and a half aſunder at leaſt, they will continue their growth without impediment to the Spinach, which in ſpring being all cleared off for uſe, there remains a full crop of cabbages, &c. in good forwardneſs; ſo we thus both gain time and ground.

But with reſpect to the culture of this crop of winter Spinach, the plants coming up in a week or fortnight after ſowing, will in three or four weeks after that, when their leaves are an inch broad, want thinning and clearing froom weeds, performing it if poſſible by hoeing in dry weather, leaving the plants three or four inches aſunder, which will be room enough for the preſent, as ſome may afterwards be gradually thinned out for uſe, ſo as to leave them finally about four or five inches apart; afterwards, muſt only crop the leaves for uſe all winter, taking always the larger outer ones, and the ſmaller leaves in the center gradually expand themſelves in their turn for uſe in regular ſucceſſion all winter and ſpring; but in the ſpring, when the plants grow large and croud one another, or begin to ſhoot for ſeed, they may be cut up clean to the root.

Particular attention is required to keep this crop clear from weeds by occaſional hoeings and hand-weeding as may be convenient, being particularly careful to clear away chickweed, which is apt to infeſt this crop greatly in winter; always ſhaking the largeſt of the weeds entirely off the ground, which if left at this moiſt ſeaſon, would ſoon ſtrike root again and grow.

Towards ſpring, after the rigours of winter are paſt, take opportunity of a fine dry mild day, and lightly hoe the ſurface of the ground about the Spinach, which will greatly recruit the vigour of the plants, and in February and March will ſhoot out ſtrong, and attain fine perfection again for uſe: ſtill cropping only the largeſt outer leaves at firſt, unleſs they ſtand too thick, or when they begin to ſhoot for ſeed, as before hinted, then may be cut up by the root, as they are wanted,

wanted, leaving a portion to produce ſeed, as below.

*Saving the Seed.*

When intended to ſave Spinach ſeed, may allot a portion both of the ſpring and winter crops to ſtand and run up for that purpoſe.

Remarking, you may either ſow a quantity of both varieties on purpoſe, in ſpring and autumn, in an open ſituation to ſtand for ſeed; or may leave a parcel of ſome of the crops that were raiſed for uſe; obſerving of the ſpring-crops, chuſe principally that of the February or beginning of March ſowing, which will run up early, and ripen ſeed the beginning of autumn following: and as to the winter crops, they being not raiſed till Auguſt, do not ſhoot till the following ſpring; though as they run earlier to ſtalk than the ſpring-ſowed plants, they probably will ripen their ſeeds ſomewhat earlier in autumn.

Note, in the plants deſigned for ſeed, it may be of ſome advantage to have the two varieties, round and triangular Spinach, at ſome diſtance from another, leſt by the intercommunication of the farina it may cauſe a degeneracy.

Obſerve likewiſe, in the plants allotted for ſeed, ſhould draw out all the bad ſorts, preferring thoſe of the moſt ſtocky growth, with the largeſt, moſt expanded, and thickeſt leaves; thinning the whole eight or ten inches diſtance, and cut up all weeds.

They will begin to run up to ſeed-ſtalks in April and May: the winter crops generally ſhoot firſt, and are ſoon followed by the ſpring crops, flowering in June; at which time the male and female plants diſcover themſelves diſtinctly; leaving however the whole to nature, the males will ſufficiently fecundate the flowers of the female plants, ſo as the latter will be loaded with abundance of ripe fertile ſeeds, in the end of July or beginning of Auguſt.

When the ſeed is full ripe, which is obvious by its changing brown and hardening, the ſtalks muſt be pulled up, and ſpread to dry a few days, turning them occaſionally to dry, and harden all the ſeed properly: then threſh them out, and bag them for uſe.

This newly ſaved ſeed is excellent to ſow for the winter crop, provided it is ripe time enough; it however remains perfectly good for next year's ſowing, but is not to be truſted to if more than a year old.

SPIRÆA, *Spiræa frutex*, &c.

This genus is compoſed of ſhrubby and herbaceous plants, conſiſting of many beautiful, deciduous, flowering ſhrubs, and floriferous herbaceous perennials, all of hardy temperament; and eminent for decorating the pleaſure-ground, being of upright growth, adorned with ſpear-ſhaped, pinnated, trifoliate, and decompound leaves in the different ſpecies, and terminated by ſpikes and cluſters of pentapetalous flowers.

Claſs and order. *Icoſandria Pentagynia.*

*Characters.*] CALIX, is monophyllous, acutely quinquedented, and permanent.—COROLLA, five oblong roundiſh petals inſerted into the calix.—STAMINA, twenty or more ſlender filaments, having roundiſh antheræ.—PISTILLUM, five or more germens, ſupporting five ſtyles, having capitated ſtigmas.—PERICARPIUM, oblong, acuminated, compreſſed, bivalvular capſules, containing a few ſmall acuminated ſeeds.

There are eleven ſpecies of *Spiræa*, ſeven of them being ſhrubby, with durable ſtems, &c. and the other four are herbaceous, having durable roots, but moſtly annual in ſtalk. All the ſhrubby kinds are originally exotics, from different parts of the continent of Europe and North America; and of the herbaceous kinds, ſome are indigenous plants of England, others exotics; but all the ſorts, both ſhrubby and herbaceous, are very hardy, and moſt of them have been long inhabitants in our gardens for ornamenting the ſhrubbery, &c.

*Shrubby Kinds.*

Under this head is exhibited ſome very eminent hardy, deciduous, flowering ſhrubs, obtaining from about three or four to ſix or eight feet ſtature, moſtly with ſlender pliant ſhoots, ſome garniſhed with oblong ſimple leaves, others with lobated and pinnated foliage; and the branches terminated by ſpikes and cluſters of flowers of very ornamental appearance; hence theſe ſhrubs are in good eſtimation among the curious for embelliſhing the ſhrubbery compartments, particularly the firſt three or four ſpecies, which have been long reſidents of our gardens.

There being ſeven ſpecies of theſe ſhrubby *Spiræas*, are all originally from abroad, in different parts of Europe and America, but are

are all hardy enough to ſucceed in our open plantations.

The chief ſpecies are,

[1]SPIRÆA *Salicifolia.*

*Willow-leaved Siberian Spiræa, or Common Spiræa frutex.*] Riſes with many upright ſtraight, ſlender, reddiſh ſtems and ſuckers from the root, three or four feet high; garniſhed with ſpear-ſhaped, obtuſe, ſerrated, naked leaves; and the ſtalks terminated at top by doubly-branching racemous ſpikes of numerous pale-red flowers.

This is the moſt common ſort of *Spiræa*, is in high eſtimation as a flowering ſhrub; it flowering beautifully in June and July, and frequently the ſame year's ſuckers, from the root, flower alſo in Auguſt.

The young ſhoots of this plant being ſtraight, pliant, and tough, are often uſed for tops of fiſhing rods, and riding ſwitches.

[2]SPIRÆA *Tomentoſa.*

*Tomentoſe Red-flowering Philadelphian Spiræa.*] Riſes with upright, ſlender, branchy, purpliſh ſtems, three or four feet high; ſpear-ſhaped, unequally-ſawed leaves, tomentoſe or downy underneath; and the branches terminated by doubly-branching racemous ſpikes of beautiful red flowers.

*Variety.*] With white flowers.

Both the varieties flower in June and July, and are very beautiful.

[3]SPIRÆA *Hypericifolia.*

*Hypericum leaved Canada Spiræa, Commonly called Hypericum frutex*] Riſes with ſlender brown ſtems, branching numerouſly and ſlender almoſt from the bottom, five or ſix feet high; garniſhed with oval entire leaves, and numerous ſmall white flowers all along the branches, to the very ends of the twigs, in ſmall cloſe-ſitting umbels.

This ſhrub has ſingular beauty when in flower, as every branch and twig is cloſely covered with flowers their whole length; flowering in May and June, continuing very ornamental about a fortnight.

[4]SPIRÆA *Opulifolia.*

*Gelder-Roſe-leaved Virginia Spiræa.*] Riſes with many ſhrubby ſtems branching ſix or ſeven feet high, having a brown looſe bark falling off in winter; garniſhed with lobated or lobed leaves, like the gelder-roſe and currant leaf; and numerous white flowers in corymbeous bunches at the ends of the branches.

[5]SPIRÆA *Sorbifolia.*

*Sorbus-leaved Siberian Spiræa.*] Riſes with ſhrubby ſlender ſtems and branches, three or four feet high; pinnated leaves of four or five pair of folioles uniformly ſerrated; and white flowers in panicles at the ends of the branches, in July.

[6]SPIRÆA *Crenata.*

*Crenated leaved, Siberian and Spaniſh Spiræa.*] Riſes with ſhrubby ſlender ſtems, and numerous, ſlender, browniſh branches, four feet high; having oblong leaves ſerrated at the end, and white flowers in corymbous bunches laterally from the ſides of the branches in May.

All theſe ſhrubby *Spiraæs* flower here very ornamentally, from May till July, in different ſpecies; but rarely ripen ſeeds in perfection in England; they however are all eaſily propagated, ſome by ſuckers, and all of them alſo by layers and cuttings. See their *Propagation.*

*Herbaceous Kind.*

Conſiſts of four floriferous perennials of the fibrous-rooted tribe, riſing with herbaceous annual ſtalks, from one to three or four feet high, garniſhed with pinnated, ternate, and decompound leaves, and terminated by cymoſe bunches, and panicles of flowers; they are all perennial in root, but renew their ſtalks annually in ſpring, arriving to a flowering ſtate in June and July, produce ripe ſeed in autumn, and the ſtalks ſoon after decay.

There being four ſpecies of theſe kinds, the two firſt grow naturally in England, in paſtures, &c. and the others are foreigners, but are both very hardy.

[7]SPIRÆA *Filipendula.*

*Filipendula, or Drop-wort.*] Hath a fibrous root hung with numerous ſmall oval tubers, and crowned at top with a large tuft of pinnated leaves, of many reniform ſawed lobes ſpreading near the ground; and upright herbaceous ſtalks a foot or more high, terminated by cymoſe bunches of white flowers.

*Varieties.*] Common ſingle-flowered Filipendula of the paſtures, &c. — Double-flowered of the gardens.

The ſingle ſort grows wild in England, in paſtures and chalky grounds, but is alſo retained in gardens as a flowery plant, in aſſemblage with the double ſort, which is very ornamental.

They flower in June and July, and the ſeeds ripen in autumn.

The

The root of this plant conſiſting of many thready fibres hung w th ſmall oval knobs, it obtained the name *Fi ipe idula.*

[8]SPIRÆA *Ulmaria.*

*Ulmaria*; *Meadow Sweet, or Queen of the Meadow.*] Hath a thick, fibrated, ſpreading root, upright, reddiſh ſtalks, three or four feet high; garniſhed with large pinnated leaves, of two or three pair of indented lobes, and an odd one, which is the largeſt of all, and lobated; and the ſtalks terminated by large cymoſe bunches of white ſweet-ſcented flowers, in June.

*Varieties.*] Common ſingle flowered of the meadows.—Double-flowered of the gardens.—Variegated-leaved.

The common ſingle ſort grows wild in moſt meadows in England, but is often allowed garden-culture along with the double and variegated-leaved ſorts; the flowers of all the varieties being very conſpicuous, and agreeably ſcented; but the double ſort in particular makes a fine appearance: they flower in June, and the ſeeds ripen in autumn.

[9]SPIRÆA *Trifoliata.*

*Trifoliate or three-leaved Virginia Meadow Sweet.*] Hath a fibrated root, upright, branchy ſtalks a foot high; garniſhed with almoſt equally ternate or trifoliate ſerrated leaves; and terminated with looſe panicles of white flowers in July.

[10]SPIRÆA *Aruncus.*

*Aruncus or Goat's Beard, or Auſtrian Spiræa.*] Riſes with upright firm ſtalks, three or four feet high; garniſhed with ſupra-decompound leaves; each diviſion conſiſting of three or four pair of foliola, and an odd one; and the ſtalks terminated by paniculated ſpikes of dioecious white flowers in July.

All the above ten ſpecies of *Spiræa* are very hardy, ſucceed in any common ſoil and ſituation, and are of long duration; the ſhrubby kinds being durable in root, ſtem, and branches, and deciduous in leaf; but the herbaceous kinds are durable only in root, and renew their ſtalks every ſpring; all the ſorts, both ſhrubby and herbaceous, flower abundantly every ſummer; the flowers ſeparately are ſmall, compoſed univerſally of five ſmall petals each, but being numerous and cloſely placed, are conſpicuous to view; but are rarely ſucceeded by ſeed in England in the ſhrubby kinds, though moſt of the herbaceous kind furniſh tolerable plenty in autumn.

As to the merit of all the ſorts in gardening, they are all proper furniture for ornamenting the ſhrubbery, and other parts of the pleaſure-ground occaſionally.

The ſhrubby kinds particularly have great merit as deciduous flowering ſhrubs, for embelliſhing the principal ſhrubbery compartments, placing them ſomewhat forward, in aſſemblage with other ſhrubs of equally moderate growth; and here they will exhibit a proper variety, and flower very ornamentally every ſummer.

And as to the herbaceous kinds, conſidered as flowery plants, particularly the doubles, are proper for adorning the common borders, &c. where they will flower every ſummer, and encreaſe the variety.

*Propagation, &c. of the Shrubby Kinds.*

The method of propagating all the ſhrubby kinds is very eaſy.—By Suckers, by Layers, and Cuttings.

By Suckers.—Several of theſe ſhrubby *Spiræas* are productive of many ſuckers annually from the root, which being taken off in autumn, commence good plants; but the firſt ſpecies in particular, *Spiræa Salicifolia, Willow-leaved Spiræa, or Common Spiræa frutex*, is remarkably prolific in ſuckers, that in one ſummer grow as high as the parent plant, and generally terminated by ſpikes of flowers the ſame year in autumn, and ſhould always be cleared off from the old plants every year or two in winter; as ſhould alſo the ſuckers of all the other ſorts: moſt of which ſuckers readily riſing with roots, they immediately commence proper plants, and the largeſt may be planted at once where they are to remain, and the others in nurſery-rows, to have one or two year's growth, and will then be fit for the ſhrubbery.

By Layers.—All theſe ſorts will grow freely by layers, but is a more particularly eligible mode of propagation for any of the ſorts that do not readily afford a ſufficiency of ſuckers; for almoſt every branch or twig being layed down in the earth, in autumn or winter will be well rooted, fit for tranſplantation by the autumn following.

By Cuttings.—Any of the ſhrubby ſorts will likewiſe grow by cuttings, though not to be depended upon like layers; however, in October or November, chuſing cuttings of the ſtrongeſt young ſhoots of laſt ſummer's growth, planting them in a ſhady border,

many of them will grow; and in one or two years commence good plants for the ſhrubbery.

*Propagation, &c. of the Herbaceous Kinds.*

All theſe ſorts may be propagated by ſeed, and by parting the roots.

By Seed.—This may be ſowed either in autumn ſoon after it is ripe, for the greater certainty of having them come up freely in the ſpring following, or may be ſowed early in the ſpring, as they will alſo often riſe the ſame year; keeping the plants thin, and clear from weeds till autumn, then planted out either in nurſery-rows for a year, or at once, where they are to remain.

By parting the roots.—All the herbaceous kinds may be propagated by this method in autumn, and is the only method of propagation for continuing the double-flowered and ſtriped varieties; obſerving, of all the ſorts, it may be performed either in autumn when the ſtalks decay, or early in ſpring before new ones begin to ſhoot forth.

SPROUTS.

Sprouts are ſmall young ſhoots or ſuckers, emitted from the ſides of the ſtem and heads of certain vegetables; being in many inſtances a compendium of the plant that produced them, and when detached from the parent and planted, although then deſtitute of roots, they often in the proceſs of vegetation emit fibres, ſhoot at top to mature growth, and exhibit leaves, flowers, and ſeed like the parent plant.

Likewiſe, in ſome herbaceous eſculents, young Sprouts are excellent eating, ſuch as in cabbages, &c. proving a very profitable after-crop.

But the term Sprouts is more generally applied to the lateral ſhoots or ſuckers of certain herbaceous vegetables; ſuch particularly, as moſt of the *braſſica* tribe, comprehending all the ſorts of cabbages, ſavoys, coleworts, borecole, purple broccoli, &c. which after the main head is gathered for uſe, the ſtalks remaining ſhoot forth abundance of Sprouts, that often form heads like the principal one but ſmaller; and, being detached and planted, will grow, or may be gathered for uſe as eſculents, and will prove equally good, and often ſuperior to the main-head for eating.

Theſe Sprouts however, of the cabbage-tribe, have merit chiefly as eſculents, and very little in the work of propagation.

For although they will grow if planted while young, they are only proper to be uſed occaſionally in particular caſes; as for example, in planting cabbages for ſeed in any particular good ſort, which having the main-head gathered early in ſummer for uſe; and the ſtalk having produced a quantity of good Sprouts ſoon after, we ſometimes ſlip off a quantity of the beſt of them towards autumn, plant them in rows two feet aſunder, giving occaſional waterings, will grow and ſhoot up to ſeed next ſpring. See BRASSICA.

However, the Sprouts of all the cabbage-tribe, conſidered as eſculents, are admirable fine eating, generally boil exceeding green and tender; but thoſe Sprouts produced from the forward cabbage-ſtalks in ſummer and autumn, are always larger and finer than the winter and ſpring Sprouts, as ſometimes the Sprouts produced on the ſtalks of the early-cut cabbages, often alſo cabbage into tolerable little firm heads towards autumn; the ſugar-loaf cabbage particularly, producing abundance of fine Sprouts in ſummer, which being gathered while young and green, are ſome of the moſt excellent culinary greens of the ſeaſon; likewiſe forward ſavoys being cut early in autumn, the remaining ſtalks produce fine large ſprouts the ſame year, fit for uſe in the early part of winter; later crops of the ſame plants produce alſo abundance of ſmall Sprouts in the ſpring; and the borecole is remarkable for its great production of Sprouts towards ſpring, emitted all along their tall ſtems from the very bottom to top; alſo purple broccoli never fails to produce a ſecondary crop of excellent Sprouts furniſhed with little tender heads.

Thus all theſe cabbage and colewort tribe, that after the main-heads being arrived to perfection and gathered for uſe, the ſtalks furniſh a plenteous ſupply of Sprouts, coming in for a ſecond crop; thoſe produced in ſummer and autumn continuing long in perfection; but the ſpring Sprouts run ſmaller, and continue but a ſhort time before they fly up for ſeed; they are nevertheleſs very acceptable and uſeful, at that ſeaſon of the year.

Therefore, in the culture of all the above varieties of the cabbage kind, it is proper after gathering the main-heads, to leave a quantity of the ſtalks of the beſt and forwarder crops, of the reſpective ſorts, to produce

duce Sprouts; and if towards autumn or winter, &c. the ground ſhould be wanted for other crops, the ſtalks may be removed and trenched in by the roots in another place, not in any ſhady bye corner as often practiſed, nor placed too cloſe, as the Sprouts would prove ſmall and trifling, and be liable to be eat up by ſlugs; but being placed in an open ſituation, in rows a foot aſunder, the Sprouts will continue their growth in much greater perfection, though probably not equally ſo good as if the ſtalks had remained undiſturbed.

Thus the product of Sprouts will prove a very beneficial and acceptable ſupply, both for uſefulneſs and variety at table.

The ſtalks of cauliflowers and cauliflower-broccoli, rarely produce any Sprouts, ſo it is needleſs to leave them ſtanding.

STAMINA, the male organs of flowers.

Stamina, conſiſting of the filaments and antheræ, the male organs of every flower; being the fine chives or thread-ſhaped parts ſituated in the center of the *corolla*, in number from one to twelve, or twenty or more; and compoſed of the three following parts.

[1]*Filamentum*, the filaments or thread-ſhaped parts elevating the antheræ. See FILAMENTUM.

[2]*Antheræ*, the ſummit of the filaments, and that part which contains the *pollen* or fecundating duſt or farina. See ANTHERÆ.

[3]*Pollen* or farina, the fine duſt, or fecundating male ſperm contained in the antheræ; and when ripe, diſperſed upon the ſtigma or female organ, to effect the important office of impregnation.—See ANTHERÆ and FILAMENTUM, &c.

It is obſervable in moſt flowers, that the Stamina and piſtillum come together; and the antheræ and ſtigma ripen and becomes of full vigour at the ſame time to effect the work of fecundation.

For the Stamina containing the genuine male ſperm of plants in the antheræ, that without its fecundation aid no plants would be effectually prolific, but moſtly abortive; at leaſt, if they produce ſeeds, they would not vegetate.

In hermaphrodite plants the *Stamina* or male organ being placed in the ſame flower with the female genitals, are for the moſt part all of equal height, generally ſurrounding the piſtillum in ſuch ſituation, as the farina or male ſperm lodged in the antheræ, may readily reach the *ſtigmata* of the female flower to impregnate it effectually; but in ſome hermaphrodite flowers the piſtillum being ſhorter than the Stamina, the flowers though nodding before, upon opening generally ſtand upright, that the powder of the antheræ may fall upon the ſtigma; and after conception probably reſume their drooping or pendulous poſture again; and in other hermaphrodite flowers having the ſtyle longer than the Stamina, it either bends back like ram's-horns towards the antheræ, or the whole flower droops that the antheræ may drop its duſt down upon the female organ. See HERMAPHRODITUS *flos*.

In monoecious plants, the Stamina and piſtillum are in different flowers, ſituated apart on the ſame plant, as in cucumber and melon; but in many ſorts have the male flowers moſtly placed above the female, that the farina or fertilizing powder may more readily fall on the ſtigma of the piſtillum: or ſo ſituated as to be eaſily conveyed by the air or flying inſects, ſkipping from flower to flower, ſufficiently to effect the impregnation. And in ſome plants, ſuch as cucumbers, growing in hot-beds at an early ſeaſon, we often perform the fecundation by art, carrying the male bloſſom to the female, and diſcharge the contents of the antheræ upon the ſtigma; but when the warm ſeaſon is advanced to admit of the plants being fully expoſed, that operation is effected by the air, or bees, conveying the proliferous duſt of the antheræ to the female bloſſom. See CUCUMIS and MONOECIA.]

And in the dioecious plants the Stamina and piſtillum are in ſeparate flowers, ſituated on different plants, ſpecies of the ſame genus, as in ſpinach, hemp, hops, &c. but ſo wonderfully contrived by the great Author of Nature, that the male duſt of the antheræ is conveyed to the female flowers by the gentle breezes of air, &c. and impregnate them. See the Claſs DIOECIA, under the head CLASSIS. See alſo SEXUS, PISTILLUM, STIGMA, and STYLUS.

STANDARD Trees.

Standard-trees are to be conſidered as all trees with upright ſingle ſtems, and ſtand detached without being trained to any wall, &c. or other ſupport.

The name Standard-trees is applicable both to all ſorts of fruit and foreſt-trees, and all other tree and ſhrub kinds that, having upright ſtems, ſtand detached erectly without aid of ſupport: though the word

Standard is more generally underſtood of ſuch trees as grow with tall erect ſtems, ſix or eight feet high, or more, before they branch out to form the head; ſuch as the common Standard apples, pears, and other fruit-trees in orchards and gardens, and the common foreſt-trees of the woods and fields; in gardening, however, we commonly diſtinguiſh three ſorts of Standard trees; namely, Full Standards, Half Standards, and Dwarf Standards; fruit-trees particularly, being occaſionally trained in all theſe ways; but foreſt and tall ornamental trees rarely in any other than Full Standards; though in the ſhrub tribe they are occaſionally formed both into half and Dwarf Standards, according to their natural ſtature of growth. See each as below.

### Full Standards.

Full Standards.—Theſe are ſuch trees that are trained with tall, ſtraight, clean ſtems, ſix or ſeven feet high or more, clear of branches, then ſuffered to branch out at that height all around to form a head, as in common Standard apples, and pear-trees, foreſt-trees, &c.

All trees deſigned as Full Standards, ſhould be trained accordingly in their minor ſtate, by trimming off all lower laterals gradually as the ſtem advances in height, to encourage a clean ſtraight growth to the proper height, and promote the aſpiring of the top or leading ſhoot more expeditiouſly; ſuffering the leader always to remain entire, eſpecially in all foreſt-trees; or if it ſhould happen to fork, take off the worſt, and leave the ſtraighteſt ſhoot to run up, to continue the prolongation of the ſtem; and having thus run them up with clean ſtems ſix or ſeven feet, ſuffer them at that height to branch out into a head, and run in height as faſt as poſſible; though in fruit-trees the ſtem is often topped at ſix or ſeven feet height, to force out a ſet of laterals in that part, to form a regular ſpreading head of but moderate height, for the greater convenience of gathering the fruit: however, for all kinds of foreſt-tree Standards never reduce the top, but permit the leader to remain ever entire to run up in height; for the beauty and worth of ſuch trees conſiſts in their lofty ſtature.

However in ſeveral foreſt and ornamental Standards of the evergreen-tribe, the trimming their ſtems from laterals while young, as above, muſt be but ſparingly practiſed; ſuch as the pines, firs, cedars, and ſeveral others of the coniferous tribe, which being all of a reſinous nature, do not ſucceed if too cloſe pruned; ſo in training all theſe ſorts of ſtandards, trim only any lower ſtragglers occaſionally. Beſides, the diſpoſition of the branches of theſe ſorts covering the ſtem in circular rays to the very bottom, is thought additionally ornamental in their growth.

Almoſt all ſorts of fruit-trees may be trained for full Standards, except vines, though all ſorts will not ripen their fruit on Standards in this country; ſuch as peach, nectarines, apricots, and figs; on the other hand, all ſorts of apples, pears, plums, and cherries, ripen their fruit freely on Standards.

All fruit-trees deſigned as full Standards, are raiſed by grafting, &c on the freeſt ſtrong-ſhooting ſtocks, and trained with ſtraight clean ſtems full five or ſix feet high, either the ſtock trained up to that ſtature, and ſo grafted or budded at the deſired height, and the graft or bud branching out forms the head; or the ſtock may be grafted, &c. near the ground, and the firſt ſhoot from the graft or bud, trained up for a ſtem to the height aforeſaid; then ſuffered to ſend forth branches: obſerving in either method, it is next to be conſidered whether you intend the tree ſhall form a ſpreading open head, or aſſume a more erect and aſpiring growth; in the former caſe, if you top the leading ſhoot of the graft or bud, at ſix or ſeven feet from the ground, it will force out lateral ſhoots at that height, and commence a ſpreading head open in the middle, ſuffering however, the whole afterwards to take their own growth; and in the ſecond inſtance, that by permitting the leading ſhoot to remain entire, it will aſpire in height, and the whole head will aſſume a more upright and lofty ſtature; in both methods the heads will afterwards naturally branch out abundantly, and furniſh themſelves ſufficiently with bearing wood, producing fruit in two or three years from the grafting and budding; ſuffering them generally to take their own growth without ſhortening, and but very little other pruning, except the regulating any very irregular or bad growths, as below.

It being expedient to train moſt of our principal hardy fruit-trees as full Standards, as that when planted in continued rows, either in gardens or orchards, by having tall ſtems elevating the head conſiderably from the ground, it both admits the influence of the ſun and air more freely to the head all around; and admits of obtaining crops of eſculents,

eſculents, graſs, &c. on the ground, under their ſpreading branches.

With reſpect to the general culture of full Standard fruit-trees, in regard to pruning, &c. very little is required after the firſt training, to form the ſtem to the proper height, and the firſt ſhoots advanced at top to give the head its firſt formation; they ſhould afterwards generally be allowed to take their own growth, except reducing any very irregular growths, &c not ſhortening the general branches, but permit the whole to ſhoot both in length and branch laterally in their own way; and they will thus all naturally form fruit ſpurs all along their ſides upward for bearing; remarking, however, when any very irregular growing branch occaſionally occurs, it ſhould be retrenched; alſo if the head is much crowded, ſome ſhould be judiciouſly thinned out to keep the middle open, long ramblers reduced, and all ſuckers from the root, ſtem, and middle of the head, cleared away, and all dead wood; which occaſional prunings may be performed any time in winter.—See the culture of different fruit-trees, as apples, pears, plums, cherries, &c. under their proper heads; alſo PRUNING.

But ſometimes Full Standard fruit-trees are alſo planted againſt walls, and trained as wall trees; this being frequently practiſed for high walls, as the Standards having tall ſtems elevating the head ſix or eight feet, ſo as immediately to cover the upper part of the wall, whilſt dwarfs and Half Standards cover the bottom and middle part, and thus may every part of the wall be fully occupied at once; but the dwarf-trees being deſigned as the principal reſidents, that after they begin to advance conſiderably, and the Standards having borne a few years, the latter have their under branches gradually reduced to make room for the dwarfs, and at laſt are either wholly tranſplanted or deſtroyed, leaving the dwarfs in entire poſſeſſion of the wall, covering it effectually from bottom to top with their branches. See the different ſorts of wall-trees, as peaches, nectarines, apricots, &c. — Alſo the article WALL-TREES.

### HALF STANDARDS.

Half Standards.—Theſe are trees trained with ſhort ſtems only three or four feet high, then ſuffered to branch out at that height to form heads; being practiſed for many ſorts of fruit-trees, ſometimes both as detached Standards by way of variety, and by having low heads the fruit is more eaſily gathered; and likewiſe are often deſigned as wall-trees for high walls; that, as obſerved of the full Standards, they may cover the middle or upper part of the wall, whilſt dwarfs occupy the lower part.

As to the method of raiſing theſe Half-Standard fruit-trees, it is nearly the ſame as obſerved for the Full Standards only, they being grafted, or budded upon lower ſtocks, training them with upright ſingle ſtems only three or four feet high, either the ſtocks on which they are to be grafted trained up to that height for a ſtem; or being grafted or budded low in the ſtock, and the firſt main ſhoot of the graft, &c. led up for a ſtem, and ſo top it at the aforeſaid height to force out branches to form the head; ſuffering the head in all thoſe deſigned as detached Standards to branch out all around, and permitted to run up to a full ſpread, nearly according to their natural mode of growth, except juſt reforming any ill-growing branch, as hereafter noticed; for ſhortening the branches ſhould be very ſparingly practiſed, which would force out numerous uſeleſs ſhoots, and prevent the formation of bearing wood, eſpecially in the apple, pear, plum, and cherry kinds; remarking thoſe intended for walls ſhould have the head trained in a ſomewhat fanned manner, to ſpread to the wall like a common wall-tree; and as to the after-pruning, the ſame is to be obſerved as hinted in the general culture of the reſpective ſorts under their proper genera, whether in detached Standard or againſt walls.

It may ſometimes be proper to have theſe Half Standards ſo trained as to form heads of as moderate growth as poſſible, eſpecially the detached Standards, when deſigned for ſmall compartments; in which caſe they are grafted or budded upon the more dwarfiſh ſort of ſtocks, as apples upon codlins, and pears upon quinces, and ſo of other fruits; in which the head will always ſhoot moderate, and never ramble wide or grow high. See STOCKS.

But although a few Half Standard fruit-trees may be eligible as detached Standards for variety, they are not proper for any general plantation in the open quarters of the garden; becauſe their branches coming out low may impede the growth of under-crops; may however have a range thinly planted along the boundary or diviſion of any wide compartment, and their heads

ſuffered to run as hinted for the Full Standards.

For walls however that are eight or nine feet high, it is very proper to have a ſufficiency of Half Standards to plant between the dwarfs or principal reſidents, to cover the middle or upper half of the wall, whilſt the dwarfs occupy the lower ſpace, as remarked of the full Standards.—See WALL-TREES.

Half Standard fruit-trees are alſo proper to plant in forcing frames to produce early fruit. See FORCING FRAMES.

The culture of detached Half Standards, in reſpect to pruning, is nearly as the Full Standards; that having ſhot out at top to form the head, permit them to branch away both in length and laterally nearly in their own way, except juſt reducing any conſiderable irregularity, crowding branches in the middle, long ramblers, and all ſuckers from the root, ſtem, and head, and all dead wood; and thus the regular branches remaining at length, will emit fruit-ſpurs abundantly in every part for bearing.

And as to the Half Standards againſt walls, they are to be pruned and managed as other wall-trees, each according to its nature, as directed under their proper heads.

Foreſt-trees, and the taller ornamental tree kinds, are rarely ever trained as Half Standards, but moſtly always ſuffered to run up in height to their full ſtature, unleſs any particular ſort may be required to form buſhy Half Standards for ſome particular purpoſe; in which caſe if topped at three, four, or five feet height, it will branch out into a buſhy head.

Many of the ſhrub kind in their natural growth aſſume the appearance of Half Standards, though ſome are often branchy to the very bottom, or riſe with ſeveral ſtems; but might readily be trained with a ſingle clear ſtem, three or four feet high, and then ſuffered to branch out into a full head.

### DWARF STANDARDS.

Dwarf Standards.—They are trained with low ſtems only one or two feet high, being then topped to force out branches at that height to form the head.

Formerly ſeveral ſorts of choice fruit-trees were trained as Dwarf Standards, with ſtems ſeldom more than one foot high branching out at that height, forming proportionably low heads; being generally planted round the great quarters of the kitchen-garden, &c. inſtead of eſpaliers, and the heads kept down low by cloſe pruning, whereby they never produced much fruit; they however greatly prevailed in ancient gardening, and conſiſted of three ſorts.—Concave dwarfs, having the middle of the head hollow or concave. —Convex dwarfs having the head full from the middle all round —Horizontal dwarfs, having all the branches extended all round, in a flat or horizontal poſition; but the concave dwarf was in moſt eſteem; all of which Dwarf Standards being raiſed by grafting, &c. upon the moſt dwarfiſh ſtocks, ſuch as apples on paradiſe ſtocks, and pears on quinces, &c. in order to dwarf them as much as poſſible in their growth (ſee STOCKS); and as they ſhot in height, each year's ſhoots were generally pruned ſhort; and to keep the head down, and confine it within a ſmall compaſs; but by this ſevere pruning, they were forced into numerous uſeleſs ſhoots annually, and ſeldom formed a ſufficiency of bearing wood; ſo that they never anſwered the end effectually; and their branches growing ſo low, no ſmall crops could be obtained on the ground under them, on which conſideration they are become in diſrepute, eſpecially ſince eſpaliers have been brought to ſuch perfection. — See DWARF TREES and ESPALIERS.

However, for the ſake of variety and curioſity, a few Dwarf Standards of all ſorts of fruit-trees might be admitted, one here and there, and by a judicious moderate pruning, according to their nature as directed for the reſpective ſorts under their proper heads, and the article DWARF TREES, they will bear abundantly in proportion to their ſize.

Likewiſe may have ſome Dwarf Standard fruit-trees in pots, for the purpoſe of forcing in hot-houſes, forcing-frames, hot-beds, &c. particularly early May, and May duke-cherries, nutmeg-peaches, maſculine apricots, figs, vines, gooſeberries, currants, &c. which being placed in the above departments at the proper ſeaſon, i. e. January or early in February; they will often ripen a few fruit very early in tolerable perfection, which might be brought to table growing on the trees in the pots. But dwarf Standard fruit are alſo proper to plant fully in the borders in forcing frames. See FORCING-FRAME.

For the particular method of raiſing and training the different ſorts of theſe Dwarf Standards. See DWARF TREES.

Numbers of the upright ſhrub tribe naturally form themſelves of the Dwarf Standard kind,

kind, as riſing with low, erect, firm ſtems, perhaps but half a foot, or a foot or two high, branching out near the ground into buſhy heads, ſuch as the gooſeberry, currant, and numerous flowering ſhrubs and evergreens; though great numbers of the ſhrub kind are apt to riſe with ſeveral ſtems immediately from or near the root, forming a buſhy growth quite from the bottom, which in many caſes in the ſhrubbery way may be allowable; in others, it may be proper to train them with one ſtem, which is eaſily effected by retrenching the ſuperfluities and trimming away low ſtragglers, forming a clear ſingle ſtem half a foot, or a foot or two high, according to their nature, then ſuffered to branch out into a full head.

For many of the low Standard flowering ſhrubs and evergreens appear to the beſt advantage, when trained as Standards to a ſingle ſtem a foot or two high, terminated by a branchy full head.

Likewiſe, all the fructiferous ſhrubs, ſuch as all the varieties of currants and gooſeberries, ſhould generally be trained with a ſingle ſtem a foot or more high, then permitted to branch out at that height into a regular head, keeping the internal part always tolerably open, and the branches moderately thin, and ſhorten them but ſparingly, particularly the goooſeberry.—See RIBES.

STAPHYLÆA, Bladder-nut.

Two hardy deciduous flowering ſhrubs compoſe this genus, both of which are proper furniture for the ſhrubbery, being of largiſh upright growth, generally obtaining eight or ten feet ſtature, adorned with pinnated and ternate five, and three-lobed leaves; and long ſlender bunches of pentapetalous flowers, ſucceeded by bladder-like capſules; whence the name Bladder-nut.

Claſs and order, *Pentandria Trigynia.*

*Characters.*] CALIX, is roundiſh, concave, coloured, and almoſt as large as the corolla. —COROLLA, five oblong erect petals, nearly like the calix, and a pitcher ſhaped nectarium at the bottom.—STAMINA, five oblong erect filaments, crowned with ſimple antheræ. — PISTILLUM, a thick three-parted germen, and three ſtyles, having obtuſe ſtigmas contiguous.—PERICARPIUM, three inflated ſhaped-ſhaped capſules, joined together by a longitudinal ſuture or ſeam, having acuminated tops, and open inwardly, incloſing two almoſt globular, hard, nut-like ſeeds.

There are only two ſpecies, both very hardy deciduous ſhrubs, the firſt of which is a native of England and other parts of Europe, the other is from America; are diſtinguiſhed by the names of five-leaved, and three-leaved Bladder-nut.

The ſpecies are,

[1]STAPHYLÆA *Pinnata.*

*Pinnated five-lobed European Bladder-nut.*—Riſes with upright, ſhrubby, ſmooth, browniſh ſtems, branching eight or ten feet high or more, with very pithy ſhoots; garniſhed with pinnated leaves of two pair of large, oblong, oval lobes, and an odd one; and at the axillas along the ſides of the branches, long pendulous bunches of white flowers, ſucceeded by large, inflated, or ſwoln, bladder-ſhaped capſules, containing roundiſh hard ſeeds or nuts ripening in autumn.

This ſort grows wild in England, and many other parts of Europe; and is cultivated in gardens to encreaſe the variety, in ornamental plantations, where it flowers and ripens ſeed annually.

The ſeeds or nuts are in ſome countries eaten, but have a very unpalatable reliſh.

[2]STAPHYLÆA *trifoliata.*

*Trifoliate or Three-leaved Virginia Bladder-nut.*] Riſes with upright, ſhrubby, ſmooth, greyiſh ſtems, branching eight or ten feet high; garniſhed with ternate or trifoliate leaves, being compoſed each of three large oval lobes; and at the ſides of the branches, long, hanging bunches of white flowers, ſucceeded by large inflated capſules, containing roundiſh hard ſeeds, ripe in autumn.

Both the ſpecies flower annually in May, numerouſly in pendulous bunches, each flower having five oblong petals; and the ſeeds ripen in autumn, proper to ſow for propagation.

Theſe ſhrubs are very eligible furniture for diverſifying any of the hardy ornamental deciduous plantations, but particularly the larger ſhrubbery compartments, where being planted in aſſemblage with other ſhrubs, principally of the deciduous tribe, they will agreeably multiply the variety with their pentaphyllous and ternate foliage, long pendulous bunches of flowers, and bladder-ſhaped capſules, which exhibit a ſingular appearance in autumn.

*Method*

*Method of Propogation.*

The propagation of both theſe ſhrubs is moſt eaſily accompliſhed by three or four different methods, viz. by ſeed, ſuckers, layers, and cuttings.

By Seed.—This ripens plenteouſly in autumn, when it ſhould be ſowed ſoon after it is ripe, in a bed or border of any common earth, either in drills or promiſcuouſly on the ſurface, covering them near an inch deep; and being thus ſowed early in autumn, they will come up the following ſpring, though probably not all of them till that time twelvemonth, keeping them clean from weeds; and, if in the early part of ſummer, very dry weather prevails, refreſh them with frequent waterings, repeating thoſe operations during ſummer as occaſion may require; and by autumn or ſpring following, the largeſt plants will be fit to plant out in nurſery-rows, or at leaſt in the ſecond autumn they may be wholly planted out, placing them in rows two feet aſunder, and one foot diſtance in each row; here to have two or three years growth, or till wanted for the ſhrubbery, &c.

By Suckers.—The plants of a few year's ſtanding generally ſend up ſuckers from the bottom in tolerable plenty, which may be eaſily taken up in autumn or winter with roots, and planted in nurſery-lines, to have one or two years growth, then tranſplanted into the ſhrubbery, when required.

By Layers.—In autumn or winter chuſing the younger branches, lay them either by ſlit or twiſt-laying (ſee LAYERS), and they will be properly rooted by the following autumn; when they ſhould be planted off in nurſery-rows for a year or two, to gain due ſtrength for the ſhrubbery.

By Cuttings.—In October or November procure a quantity of young ſhoots of the former ſummer's growth, chuſing principally the lower part of the ſhoots; plant them in a ſhady border, giving occaſional waterings the following ſpring and ſummer in dry weather, and they will be moſtly well rooted by the following autumn.

STATICE, Thrift or Sea Pink, and Sea Lavender.

Conſiſts of low, hardy, herbaceous, and under-ſhrubby plants for ornament and variety; ſome of which being flowery perennials are employed in the decoration of the pleaſure ground; they riſing, ſome ſorts with very low, cloſe, tufty heads, of numerous, ſmall, narrow, graſſy, evergreen leaves cloſe to the earth, and very ſlender ſingle flower-ſtalks but half a foot, or a little more or leſs high; others having much larger, broad, radical leaves, and ſtronger ſtalks dividing into branches; all the ſtalks and branches of the ſorts in general terminated with globular and ſpiked aggregate heads, of numerous ſmall, infundibuliforme, pentapetalous flowers.

Claſs and order, *Pentandria Pentagynia.*

*Characters.*] CALIX, an aggregate of florets collected into globular or ſpiked heads, included wholly in one common cup of divers ſtructures in the different ſpecies, each floret having alſo its proper calix, which is monophyllous and funnel-ſhaped.—COROLLA, is funnel ſhaped, conſiſting of five ſmall petals, narrow at the baſe; but broad, obtuſe, and ſpreading above.—STAMINA, five ſubulate filaments that adhere to the ungues or claws of the petals, and incumbent antheræ.—PISTILLUM, a ſmall germen, and five ſiliform diſtant ſtyles, crowned with acute ſtigmas. PERICARPIUM none, the ſeeds one in each floret, are lodged in the general calix, each ſeed coronated by its own proper cup.

Since to this genus has been added the *Limonium* or Sea Lavender, the ſpecies are multiplied to fourteen in number; the firſt of which is the common Thrift or Sea Pink, a ſmall hardy herbaceous evergreen, well known to all for its uſe, occaſionally as an edging to borders, &c. comprehends ſeveral varietes, all very low, cloſe-growing, graſſy-leaved plants: the other thirteen ſpecies, being moſtly of the Sea Lavender kinds, are of larger growth, with broadiſh leaves; and conſiſt of herbaceous and under-ſhrubby perennials and annuals; but not poſſeſſing any great merit for general garden culture, are not much attended to; ſo that only one ſpecies, common Thrift, and varieties above hinted, are commonly cultivated: however, ſome of the moſt material of the Sea Lavender kinds, as below, may alſo be introduced for variety where large collections are required.

*Common Thrift Kinds.*

One ſpecies only comes under this head, compriſing however ſeveral varieties; ſome of which were formerly conſidered as diſtinct ſpecies,

ſpecies, but prove all varieties only of *Statice Armaria*, or common Thrift, differing ſomewhat in their ſize and colour of the flowers, as noticed below.

[1]STATICE *Armeria.*

*Armeria, Common Thrift or Sea Pink.*] Hath a thick, fibrated, ſpreading, perennial root, dividing into heads at top, cloſely crowned with thick tufty heads of numerous linear, graſſy, evergreen leaves cloſe to the ground; and among them numerous ſlender ſingle ſtalks, from five or ſix to eight or ten inches or more; each crowned with a globular aggregate of red and other coloured flowers in the varieties, appearing in June and July.

*Varieties.*] Common ſmaller Thrift with pale-red flowers.—With ſcarlet flowers, and with white flowers.—Greater Thrift with red flowers.—Greater Thrift with white flowers.—Leaſt Sea Pink with ſmall fleſh-coloured flowers.—All of which flower profuſely from the end of May until July or Auguſt.

Remarking, as to the difference in ſize and growth of theſe varieties.—The common ſmaller Thrift is diſtinguiſhed by its leaves being more narrow, graſſy, and of lower growth, and the flower ſtalks only five or ſix inches high, being the ſort moſt commonly uſed for edgings; the greater Thrift having longer and broader leaves, and flower-ſtalks near a foot high; and the leaſt Thrift have exceeding narrow, ſhort leaves, flower-ſtalks only three or four inches high, and very ſmall heads of flowers.

All the ſorts are inhabitants of plains and meadows, chiefly near the ſea in moſt countries in Europe and North America; but have been long admitted into gardens as flowery plants, and were formerly in great eſtimation to plant for edgings to beds and borders, as being of very low cloſe growth, and always green: and alſo to plant in tufts about the flower-borders and other compartments of the pleaſure ground, as they ſucceed in any ſoil and ſituation, and flower very abundantly in June and July, making a good ornamental appearance, more particularly the red and ſcarlet ſorts; but they make the grandeſt ſhow when diſpoſed in long cloſe ranges, either in ſingle rows, as edgings to borders along the ſides of the walks, or in one or more ranges together, extended lengthways, of any bed or border in ſome conſpicuous ſituation; and for all of which purpoſes they are very expeditiouſly raiſed by ſlipping the heads and roots at almoſt any ſeaſon, but principally in autumn and ſpring.—See their *Propagation.*

However, for edgings in particular is the principal merit of theſe plants, and as they grow very cloſe, low, and continue in verdure all the year, they form the moſt uſeful and eligible edging, next to box; and in ſome caſes, in rural works particularly, are ſometimes preferred to box edgings, eſpecially as they flower very ornamentally for two months in ſummer; but are not however ſo proper for general uſe; as being rather apt to ſpread ſoon out of bounds and require to be reduced, either by cutting it inconſiderably on each ſide, or by taking it up and replanting it afreſh every two or three years.—See EDGINGS.

*Sea Lavender Kinds.*

Theſe ſorts aſſume a different appearance from the common Thrift kinds, both in their foliage and mode of flowering; their leaves not being ſo ſmall and graſſy, but moſtly plane and broadiſh, and the ſtalks generally dividing into panicles terminated by the flowers, not in globular heads like the Thrift, but chiefly in ſpiked aggregates; but their general *characters* proving the ſame as in the Thrift, they are all conſidered as true ſpecies of *Statice.*

[2]STATICE *Limonium.*

*Limonium, or Sea Lavender.*] Hath thick, reddiſh, fibrated roots, crowned with oval, ſpear-ſhaped, ſmooth leaves; and upright, firm, taper, naked ſtalks a foot or more high, dividing into paniculated branches, all terminated by ſpiked heads of pale-blue flowers, in July and Auguſt.

*Varieties.*]—Common great Sea Lavender.—Narbonne great late-flowering Sea Lavender.—Olive-leaved Sea Lavender.—Deep blue-flowered Sea Lavender.—White flowered Sea Lavender.

This ſpecies grows naturally on the ſea-ſhores of England, &c. and is ſometimes retained in the gardens for variety.

[3]STATICE *Tartarica.*

*Tartarean Sea Lavender.*] Hath long, ſpear-ſhaped, ſharp-pointed leaves; and forked, branchy, ſpreading ſtalks ſix or eight inches high, terminated by ſpiked heads of whitiſh alternate flowers at a diſtance, in Auguſt and September.

[4]STATICE *Reticulatum.*

*Netted Sea Lavender.*] Hath cuneiform or wedge-ſhaped lower leaves; proſtrate ſlender ſtalks, and retroflexed naked ſterile branches netted or matted together; and the ſtalks terminated by panicles of pale blue flowers, in July and Auguſt.

This is a ſea-ſide plant of England, and moſt parts of Europe.

[5]STATICE *Cordata.*

*Cordated or Heart-leaved Mediterranean Sea Lavender.*] Hath thick, ſpatulate, heart-ſhaped, retuſe, ſmooth leaves cloſe to the ground; and ſlender naked ſtalks ſix inches high, terminating in panicles of pale red flowers, in Auguſt.

[6]STATICE *Flexuoſa.*

*Flexuoſe Siberian Sea Lavender.*] — Hath oval nervous leaves from the roots; and weak, flexuoſe, branchy ſtalks eight or ten inches long, terminated by corymbus bunches of flowers, in Auguſt and September.

[7]STATICE *Suffruticoſa.*

*Under-ſhrubby Siberian Sea Lavender.*] Hath under-ſhrubby ſtalks, naked and branching near the top, riſing near two feet high; ſpear-ſhaped variegated leaves; and cloſe-ſitting round heads of pale-blue or whitiſh flowers, in Auguſt and September.

All theſe ſeven ſpecies, both of the Thrift and Sea Lavender kinds, are very hardy fibrous-rooted perennials, ſix of them being herbaceous, and the ſeventh is under-ſhrubby; all of which flower abundantly in ſummer, but not all very ornamentally; the flowers are numerous, but ſeparately ſmall; and are univerſally funnel-ſhaped, and pentapetalous; and many collected together into aggregates, within one general cup (ſee the *characters*); being generally produced at the ends of the ſtalks and branches, in ſome ſingly, in others in panicles as before deſcribed in each ſpecies; but are not all commonly ſucceeded by ſeeds in the gardens.

The firſt ſpecies, *Statice Armeria*, and varieties, being conſiderably the moſt material, both for their uſe as edgings, and flowering plants, are almoſt the only ſpecies of this genus that is generally cultivated.

The other ſix ſpecies are at preſent not common in the gardens, except in thoſe of ſome curious botaniſts for obſervation and variety; however, all the ſorts of them that can be obtained, may with propriety be admitted, to encreaſe the variety, as they take up but little room, will grow in almoſt any common ſoil and ſituation, though if but moderately expoſed to the ſun, they will probably be the more ſucceſsful and durable.

All the ſorts, both the Thriſt and other kinds, may be planted any time in autumn or ſpring.

The Thriſt kinds, as we before noticed, are proper both to form edgings, and to plant in detached tufts about the borders: the ſcarlet Thrift is the moſt beautiful in regard to its flowering, but for variety ſhould alſo admit the pale-reds, and white kinds, all of which ſucceed almoſt any where, and may be planted at almoſt any ſeaſon when not in flower; though the autumn and ſpring are the moſt ſucceſsful ſeaſons for planting them.

As to the method of planting Thrift edgings, a quantity of ſlips being obtained in the ſeaſons above-mentioned from old plants, by ſlipping or dividing the off-ſets of their roots, not however too ſmall, and each ſlip furniſhed with roots and top; then having made up the edge of the bed or border even and firm, proceed to plant them with a dibble in one range, two or three inches diſtance in the row; or to form at once a cloſe edging, may plant them ſo near as to touch one another; and ſome, to perform this more effectually, form a ſmall trench, as in planting box edgings; ſo plant the Thrift in the trenches quite cloſe together, to form immediately a compact uniform edging, in the manner of a box-edging aforeſaid. See BUXUS, SUFFRUTICOSA, and EDGINGS.

And as to the culture of theſe edgings, they ſhould every ſummer immediately after flowering, be trimmed with garden-ſhears or the like, to cut off all the decayed flower-ſtalks cloſe to the bottom; likewiſe, to trim in any projecting irregularity of the edging at ſides or top: alſo when it ſpreads conſiderably out of bounds, ſhould be cut in evenly on each ſide, in due proportion; obſerving to perform thoſe occaſional trimmings generally in moiſt weather, and not too late in autumn, otherwiſe the drought of ſummer, or the cold in winter may injure it when newly cut, and cauſe it to aſſume a ſhabby diſagreeable appearance.

Obſerve however, that when theſe edgings grow conſiderably out of bounds, or become very irregular, it is proper to take them up,

ſlip

ſlip the plants ſmall, and immediately replant them again as before, in a neat regular edging.

Sometimes theſe edgings require replanting, as above, every two or three years.

*Method of propagating all the Species.*

All the ſorts are very eaſily propagated, by ſlipping or parting the roots, in autumn and ſpring.

Thriſt kinds.—All the varieties of Thriſt propagate abundantly by off-ſets of the root and head; which in early autumn, or in the ſpring, &c. may either be ſlipped off from any growing plants, or any large old plants taken up and wholly divided, each into as many ſeparate ſlips, as it admits preſerving the root and top to each ſlip; and plant them directly, either in an edging or where wanted.

Sea Lavender kinds.—They may be propagated by parting their roots, in autumn or ſpring: alſo ſome of them by ſlips or cuttings of their ſhoots in ſummer, planted in a ſhady border, or ſhaded and watered, and they will be rooted by autumn.

Theſe ſorts may alſo be raiſed from ſeeds when they can be obtained from the places where they ripen, in England and abroad; ſowing them in autumn, or early in ſpring on an eaſt border, and in warm dry weather give frequent waterings, both before and after the plants come up; and in autumn plant them out.

STELLATA, or Starry Plants.

Such as have their leaves diſpoſed in rays or whirls round the ſtem at intervals, and point different ways like the figure of a radiant ſtar; exemplified in *Rubia tinctorum*, or common madder, &c.

STEWARTIA, *Stewartia.*

There is but one ſpecies, a hardy deciduous flowering ſhrub from North America, proper for the ſhrubbery compartments, riſing ſeveral feet high, adorned with largiſh ſimple leaves, and large pentapetalous flowers.

Claſs and order, *Monadelphia Polyandria.*

*Characters.*] CALIX, is monophyllous, divided into five oval-ſpreading ſegments, and permanent.—COROLLA, five large oval, ſpreading petals.—STAMINA, many filiform monadelphous filaments, being united into a cylinder at bottom, connected to the petals at their baſe, and crowned with roundiſh incumbent antheræ.—PISTILLUM, a roundiſh hairy germen, five ſlender ſtyles, having obtuſe ſtigmas.—PERICARPIUM, a quinquelobate pomaceous capſule of five cells, each having an oval compreſſed ſeed.

STEWARTIA *Malacodendron.*

*Stewartia* or *Malacodendron.*] Riſes with a ſhrubby ſtem branching irregularly on every ſide, eight or ten feet high, having the branches covered with a browniſh bark; oval, ſpear-ſhaped, ſawed, veined, alternate leaves, two or three inches long, and half as broad; and at the ſides of the branches large white flowers, having numerous purple ſtamina ſurrounding the five ſtyles; flowering early in June, but do not perfect ſeeds in England.

This elegant ſhrub is a native of Virginia, from which country it was introduced into our gardens to encreaſe the variety in the ſhrubbery collection; though it is not as yet near ſo plentiful here as many other American ſhrubs; but is raiſed in moſt of the nurſeries for ſale.

It is a hardy ſhrub, though young ſeedling plants of it are rather a little tender, the firſt year or two requiring ſhelter from froſt, but after having acquired more ſtrength, will ſtand very well in the open ſhrubbery the year round.

It is propagated by ſeed and by layers, and ſometimes by cuttings.

By Seed.—This the ſeedſmen procure annually from abroad; ſow it as ſoon as poſſible in pots of light earth half an inch deep, and plunge them in a hot-bed, either of dung or bark, under glaſſes, giving occaſional waterings, and moderate ſhade from the ſun, both before and after the plants come up; being careful to harden them gradually in due time to the open air in ſummer; but in winter place them under a garden-frame, to remain till ſpring; when, in order to forward them as much as poſſible, may plunge them again in a bark-bed for a month or two, till towards ſummer, then gradually hardened, and plunged in a ſhady border till autumn, at which time removed again under ſhelter all winter; and in March following, may pot them off ſeparately into ſmall pots plunging them alſo in a bark bed to ſtrike them more expeditiouſly, beſtowing proper waterings and occaſional ſhade; not forgetting to harden them as before, and indulge them with ſhelter another winter or two; and in ſpring following, when the weather is ſettled,

may venture to turn them with the balls of earth about their roots into the full ground.

By Layers.—Chuſe the young ſhoots for laying, which may be performed early in autumn, generally by ſlit-laying; and in the following ſpring and ſummer in dry weather, do not fail to give frequent waterings; and if indulged with a moderate ſhade in the heat of ſummer, they will root more freely, which they ſometimes effect in one year, when in March pot them off ſeparately; and if then plunged in a bark-bed, or in any moderate heat for a few weeks, will forward them conſiderably; removing them to a ſhady border all ſummer, to ſhelter of a frame in winter; and in ſpring after, tranſplant them with balls into the open ground, finally to remain.

By Cuttings.—Young ſhoots in ſpring and ſummer being planted in pots of good earth, and plunged in a bark-bed, ſome of them will probably ſtrike and commence proper plants, which muſt be timely inured to the open air, and managed as the ſeedlings and layers.

STIGMA of the flower,

Is the extremity or ſummit of the piſtillum, or female organs of flowers.

The Stigma forms the head or ſummit of the ſtyle, and is accounted the principal female organ of plants, deſigned for the reception of the farina or fecundatory duſt of the antheræ or male organs, which being diſcharged upon the moiſt Stigma, the particles burſt, and ſhed their fertilizing ſeminal virtue; and being abſorbed by the Stigmata, its effluvia or eſſence is tranſmitted through the ſtyle or vagina, into the heart of the germen, ovary, or ſeed-bud, for the purpoſe of impregnating the ſeeds.—See PISTILLUM, FILAMENTUM, and STYLUS.

As to figure, the Stigma is various in different plants; it being in ſome formed into a round or globular head; in others, it is either oval, orbicular, angular, crown-ſhaped, target-ſhaped, croſs-ſhaped, ſtump-ſhaped, hook-ſhaped, petal-ſhaped (as in *Iris*), obtuſe, depreſſed, concave, channelled, ribbed, ſtreaked, feathered, hairy, downy, &c.

In reſpect to number, the Stigma is either ſingle or but one, as in the generality of flowers; bifid or two, as in lilac; three, as in *campanula*; four, as in *epilobium* or French willow-herb; five, as in ſome plants.

With regard to ſituation, the Stigma generally terminates or crowns the ſtyle, as in moſt plants; ſometimes when there are many Stigmata, they are diſpoſed with admirable ſymmetry along the ſides of the ſtyle; and when the ſtyle is wanting, as in poppy and ſome other flowers, the Stigma reſts immediately on the germen or ſeed-bud.

In general, the ſurface of the Stigma is covered with a viſcous or clammy moiſture, ſerving to attract, retain, and diſſolve the particles of the fecundating powder, and thereby more eaſily tranſmit its effluvia to the ſeeds below.

For in the vegetable kingdom the genital duſt of the antheræ being carried by the air to the moiſt Stigmata, where the particles burſt, as before obſerved, and diſcharge their exceeding fine or ſubtle contents, and impregnate the ovary; as is often obvious to ſight in many plants when in flower, and the farina flying about, that part thereof lights upon and clings to the Stigma; which ſome flowers ſhew in a moſt agreeable manner, ſuch as in the panſies, that when the flower is ſcarcely opened, we ſhall ſee the Stigma like a concave globe gaping open on one ſide, and of a pure white colour; but as ſoon as the antheræ of the five ſtamina have diſcharged their genital male duſt, you may obſerve the whole Stigma filled with this duſt, or fertilizing powder, and covered all over with a yellowiſh-brown colour.

With reſpect to duration, the Stigma moſt commonly withers after the impregnation is effected, except in ſome few genera, ſuch as poppy and water-lily, &c. in which the Stigmata is permanent or abiding.

STIPULA of the leaves, &c.

Is a ſcale or very ſmall leaf on each ſide the baſe of the foot-ſtalk of ſome leaves and flowers.

Theſe Stipula are defined to be one of the *fulcra* or props of plants, deſigned to ſupport more firmly the bud of the leaf, &c. on which they are attendant, as they are generally ſtationed one on each ſide; though ſome plants have only one, and a great many none at all; they are however common to a great number of plants, both trees and herbaceous vegetables; their ſituation is moſtly on the outſide of the leaves, and in ſome few plants on the inſide; being of divers figures, and ſizes in different ſpecies; and in ſome plants they grow free, looſe, and detached; in others, they grow cloſe to the plant; in ſome plants they are deciduous or

fall

fall off before the leaves; others are permanent, continuing till the general fall of the leaf.

Thus the Stipula often afford excellent marks of diſtinction in diſcriminating the ſpecies; as from its ſituation, number, ſize, duration, &c. on the particular ſpecies, their difference is frequently more eſſentially diſtinguiſhed.

The Stipula is in many plants very diſtinguiſhable and conſpicuous, ſuch as in roſe, apricot, peach, caſſia, tamarind-tree, tulip-tree, bird-cherry, and all the papilionaceous or leguminous plants, and many others.

STOCKS, for Grafting and Budding.

Stocks, when alluding to the operation of grafting and budding, are young trees raiſed from ſeed, ſuckers, layers, and cuttings occaſionally, deſignedly for the reception of grafts or buds of other trees, of any ſelect or approved ſort, to propagate and continue them the ſame without variation, by their uniting with the ſaid young trees or Stocks, ſhoot out into branches, and become trees in all reſpects like the approved parent trees from which they were taken, and they thus remain ſupported and nouriſhed by the trees on which they are grafted, commonly termed Stocks.

For as numerous trees, particularly the varieties of certain ſpecies, not continuing the ſame from ſeed, but often vary exceedingly to very different ſorts, in order to continue them of the ſame approved varieties with certainty, recourſe is had to propagating them by the operation of grafting or budding, being the inſertion of ſhoots or buds of the ſaid approved kinds of trees into the Stock or ſtem, or even the branches of other trees, which when intended for the purpoſe of grafting, &c. are always denominated Stocks, and ſhould generally be ſpecies or varieties of the ſame genus as the trees with which they are to be grafted, or very nearly allied in their general *characters*, otherwiſe they will not grow upon one another: but the Stocks and grafts being of the ſame family, and the grafting and budding properly executed, the grafts, &c. unite firmly with the Stock, ſhoot and branch out into full heads, commencing trees in every reſpect like the ſelect kinds from which the grafts or bud were cut, producing ſhoots, leaves, flowers, fruit, and ſeed, exactly the ſame as the ſaid parent trees; whether fruit-trees, foreſt-trees, ſhrubs, &c. always retaining their reſpective properties diſtinct from the Stock, the Stock alſo continuing its inferior quality diſtinct from the graft, not interfering with the nature or quality of the trees grafted thereon; only ſupporting and nouriſhing them as effectually, as if upon their own roots; ſometimes however, particular ſorts of Stocks affect ſome varieties of trees, ſo far as to render them of longer or ſhorter duration; alſo in ſome ſorts of trees improve or diminiſh the quality of the fruit: ſo that it is of conſequence to be acquainted with the proper Stocks on which to graft or bud the different trees for general ſervice, not only the trees of different genera, but alſo thoſe of particular ſpecies, and varieties of each reſpective genus, as hinted hereafter in the general liſt of Stocks.

So that all trees, whether young or old, deſigned for grafting or budding upon, from the ſize of a large gooſe's quill, to one, two, or three inches in diameter, are diſtinguiſhed by the appellation of Stocks; becauſe the graft or bud is inſerted into the ſtock or ſtem, ſometimes occaſionally into the branches, when intended to renew any old fruit-tree, or change the ſort of fruit, or have two, three, or more ſorts of flowers, fruit, &c. on the ſame tree; in all of which caſes, the part receiving the graft or bud is ſtyled the Stock.

Remarking, that Stocks for general uſe, may be uſed as ſuch either for grafting or budding, when from the ſize of a good gooſe-quill, to half an inch, or not more than an inch thick in the part where the graft, &c. is to be inſerted; likewiſe Stocks of two, or three inches or more diameter, either the ſtems or branches are alſo occaſionally grafted or budded with ſucceſs, not proper however for general practice; for the ſmall young Stocks, of from two, to three or four years growth in the nurſery, &c. and from about a quarter to half an inch thick, or but a little more or leſs in the part to be grafted, whether dwarf or ſtandards, are generally the moſt ſucceſsful for general grafting or budding in the nurſery plantations, to raiſe any conſiderable quantity of trees for tranſplantation, either for private or public ſupply.

Ob-

Obſerving likewiſe, Stocks for grafting and budding, are employed both for moſt kinds of fruit-trees, ſome varieties of foreſt and ornamental trees, and many of the ſhrub kind occaſionally; as is generally exhibited in the culture of the reſpective ſorts in the proper genera.

Remark alſo, that Stocks almoſt in general, when intended for grafting and budding, ſhould be ſpecies or varieties of the ſame genus as the trees with which they are to be ingrafted; for moſt of the tree and ſhrub kind, whether fruit-trees, foreſt-trees, &c. ſucceed principally upon Stocks of their own family only, or ſuch that are very near kindred by the *characters* of their flowers; their being but very few inſtances in which trees of different genera will grow by grafting or budding upon one another, except in ſome ſimilar caſes as follow; for example, the peach, nectarine, and almond being all of the genus *Amygdalus*, will take upon one another; and on Stocks of the *prunus* or plum, generally ſucceeding beſt upon that kind of Stock; that though of two diſtinct genera, are all icoſandrious plants of the drupaceous ſtone-fruited tribe, nearly allied in their general *characters*; the ſame is alſo obſervable of the pear, which will take upon ſome ſpecies of the *Meſpilus* and *Sorbus*, alſo on ſome of the ſpecies of *Cratægus*, ſuch as white-thorn or haw-thorn Stocks; and all of thoſe upon one another: but neither of theſe, nor the pear, however, are equally ſucceſsful as upon Stocks of their own family; and even all the ſpecies of the ſame family do not ſucceed equally well upon one another, ſome ſorts requiring Stocks principally of their own ſpecies, others thoſe of ſome particular ſpecies or variety in the ſame genus.

For it being alſo remarkable, that although all the ſpecies of any particular genus grow by grafting or budding upon Stocks of one another, yet moſt ſorts ſucceed beſt upon their own Stocks, except in a few inſtances; for example, the apple, pear, and quince being three diſtinct ſpecies all of the genus *Pyrus*, and will take upon Stocks of one another as above obſerved, but improper for general practice, as the apple always ſucceeds beſt upon its own ſpecies, i. e. any kind of apple or crab Stocks raiſed from the kernels of the fruit; the pear upon pear Stocks raiſed in the ſame manner, and occaſionally upon quince Stocks to form dwarf-trees; and the quince grows free enough on their own, or pear Stocks; again, the plum, cherry, and apricot, being all ſpecies of the genus *prunus*, and the grafts and buds of all three ſpecies will grow upon Stocks of one another, yet not all equally proſperous; for the cherry is always the moſt thriving upon cherry ſtocks, and plums and apricots beſt upon plum Stocks.

And in ſeveral inſtances ſome ſorts are the moſt thriving on ſome particular variety of their reſpective favourite Stocks, exemplified in the peach and nectarine, which being generally more thriving and durable on plum Stocks than their own, yet on one particular variety of plum, namely the muſcle-plum-Stock, they are generally the moſt proſperous and durable; the ſame is alſo obſerved of ſome other trees, both fruit and foreſt-tree kinds, as hereafter hinted in the liſt of Stocks.

Likewiſe, ſome ſorts are the moſt proſperous on crab Stocks, others ſucceed well only on free Stocks, and ſome require dwarf Stocks, to dwarf them more or leſs, either for walls, eſpaliers, or forcing-frames, &c. See Crab Stocks, Free Stocks, &c. below deſcribed.

### *Of the different Kinds.*

For the various kinds of Stocks may for diſtinction ſake, be divided into three claſſes, agreeable to their different natures, viz. Crab Stocks, Free Stocks, and Dwarf Stocks; each of which comprehending various ſorts, both of the ſame and different genera, ſpecies, and varieties; and thoſe of each claſs, although they may prove ſpecies or varieties of the ſame genus, yet often aſſume different properties requiſite to be known previous to their being grafted or budded, as deſcribed below each under its own head.

Crab Stocks.—The ſort of Stocks generally conſidered as crabs, are all ſuch that are raiſed from ſeeds, &c. of any wild ungrafted trees, particularly of the fruit-tree kind; ſuch as the wild crab-apple of the woods and hedges, any kind of wild thorny uncultivated pears, plums, wild black and red cherry, and of ſuch other trees as have not been grafted or budded; and as to the merit of theſe wild

Crab

Crab Stocks, ſomeſorts being ſtrong ſhooters and hardy, are preferred, on which to graft ſome particular ſpecies, as ſuppoſed to improve the ſize and duration of the trees; for example, apples are very commonly worked upon the common wild Crab Stock, and cherries on the great wild black and red cherry Stock, as tending to promote a large, hardy, and durable growth proper for common ſtandards, and the larger kinds of dwarf trees; remarking however, in uſing Crab Stocks for general uſe, on which to graft any ſorts of fruit-trees, it is proper to reject ſuch of them as aſſume a very wild crab-like growth, or of a ſtunty, thorny nature, preferring thoſe that are the freeſt clean growers.

However, the appellation of Crab Stocks, is alſo often given to all Stocks indiſcriminately, before being grafted; whether raiſed from the ſeed, &c. of wild or cultivated trees, being very commonly all denominated crabs until worked with grafts or buds; though probably with ſome diſtinction, as wild crabs, and free crabs.

Free Stocks.—The name Free Stocks is commonly applied to ſuch as are raiſed from the kernels of the fruit, layers, &c. of any of the cultivated garden and orchard fruit-trees and others, which as they often prove in general more free clean ſhooters than the generality of wild crabs, have the appellation of Free Stocks, and in ſeveral inſtances when proving free clean growers, are more eligible Stocks than the wild crabs, particularly for choice pears, peaches, nectarines, apricots, and plums, both to improve the growth of the trees and quality of the fruit, as is obſerved below in the Liſt of Stocks, and in the culture of the reſpective ſorts under their proper head; obſerving however, that as alſo in theſe ſeedling Free Stocks, ſome may appear of a wild crab-like growth, or of a ſtunty thorny nature, as aforeſaid; which, when the real Free Stock is intended, ſhould be all eradicated, reſerving only the free clean ſhooters of a cultivated-like growth for grafting and budding.

But as we noticed above of the crab Stocks, all Stocks raiſed from ſeed particularly, both of the wild, and cultivated garden fruits, are before they are worked very commonly termed crabs; either wild crabs or free crabs, as before obſerved, and with ſome propriety; ſince all ſeedling Stocks though raiſed from the fineſt fruit, vary ſo greatly from the original, many of them often aſſuming a wild crab-like growth, and if permitted to ſtand long enough without grafting to bear, it is probable the fruit would prove alſo of the crab nature, intolerably hard and auſtere; hence the neceſſity of grafting and budding: but on the other hand, many of them aſſume a free, cultivated-like growth, and if trained up without grafting to a bearing ſtate, ſome out of a great many may produce tolerable good fruit, though probably not above one or two, in a hundred or more; which however, is the method by which all our fine varieties of fruit were firſt obtained, and the ſorts afterwards encreaſed and continued the ſame by grafting and budding them upon proper Stocks; ſo that for experiment, might ſelect a few of the moſt promiſing of any of theſe ſeedling Free Stocks if thought convenient, tranſplanting them by themſelves, to try to gain new varieties; but allotting however, the general ſupply to remain for Stocks, for the reception of grafts and buds of the choicer kinds of the already-acquired fruits for farther propagation.

Dwarf Stocks.—Theſe are raiſed from low-growing trees, ſome nearly of a ſhrub-like nature, and others of but a very moderate tree-growth, being occaſionally employed as Stocks on which to graft and bud trees, intended as the lower and middling ſorts of dwarfs, either for walls or eſpaliers, or as dwarf ſtandards in ſmall gardens, and to plant in forcing-frames, or to pot for forcing, or curioſity, &c. ſuch for inſtance, the paradiſe apple and codlin Stock for dwarfing apples, the quince Stock for pears, the bird cherry and morello cherry Stock for cherries, the black bullace and muſcle Stock for dwarfing apricots, dwarf almond for peaches and nectarines, when deſigned to have theſe trees of a very dwarfiſh growth, either to pot for curioſity, or for forcing in ſmall forcing-frames.

Obſerving, the moſt dwarfiſh kinds of Stocks of the above are, the paradiſe Stock, bird-cherry, black bullace, and dwarf almond; all of which being of very moderate growth, when uſed as Stocks, they dwarf the trees grafted thereon exceedingly, the head remaining within very ſmall compaſs, and ſhooting moderately into wood, ſoon forms for bearing abundantly in proportion

portion to their ſize; they however are not proper for any general uſe as common dwarf-trees, as they never attain a due ſize ſufficient to produce any conſiderable quantity of fruit, and are rarely of long duration; ſo that a few only are proper for variety, or for very ſmall gardens, or to pot, or for forcing as aforeſaid.

But as to the codlin dwarf Stocks, quince Stock, morello cherry, and muſcle-plum Stocks, they being but moderately dwarf, are proper Stocks for the middling, or larger kinds of dwarf trees, either for walls or eſpaliers, or dwarf ſtandards.

All of which dwarf Stocks both of the moſt dwarfiſh growers, and middling growth, are generally raiſed either from ſuckers, layers, and cuttings, as hereafter directed.

But we now proceed to exhibit the liſt of all the principal ſorts of Stocks comprehended in the above three kinds; crab Stocks, free Stocks, and dwarf Stocks, under the names of the reſpective genus, ſpecies, &c. in which they are uſed for grafting and budding.

*Liſt of the various Sorts.*

As it is therefore of importance to know all the different ſorts of Stocks eligibly adapted for the reception of grafts and buds of the various genera, ſpecies, and varieties of trees uſually propagated by grafting and budding; particularly, all the fruit-tree kinds, and ſome others, we will exhibit under this head a liſt of all the principal ſorts in general uſe, arranging them ſeparately under the name of the ſpecies or variety to which each ſort is peculiarly adapted as Stocks, for the reception of their reſpective grafts and buds.

For apples (*Pyrus malus*).

The Stocks for all kinds of apples, are their own kind, raiſed from the kernels of any of the cultivated apples or crab for common ſtandards, and the larger kinds of dwarfs; though the wild crab Stock is often eſteemed preferable to the free Stock for its hardy and durable nature, on which to graft common ſtandards, and dwarfs for eſpaliers, as being ſuppoſed to render them of more hardy growth and longer duration; and for lower dwarfs, the codlin and paradiſe Stock are occaſionally uſed; the former for middling dwarfs, and the latter for the ſmalleſt dwarfs, when required for ſmall gardens, &c.

All theſe Stocks for apples are eaſily raiſed, the free Stock and crabs from the kernels of the fruit, and the codlin and paradiſe Stock from ſuckers, layers, and cuttings. See PYRUS MALUS.

For the pear, (*Pyrus Communis*).

The pear-tree is grafted and budded principally on pear Stocks for general uſe, and occaſionally on quince Stocks for dwarfs; raiſed, the former chiefly from the kernels of any ſort of pears; and the latter freely by ſuckers, layers, and cuttings.

Though the pear Stock is always to be preferred for the general ſupply; raiſed from the kernels of the beſt ſummer and early autumn pears, being the moſt eligible Stock on which to graft or bud for all common Standards, and the larger dwarf pears for high walls and eſpaliers.

But to raiſe either ſtandards or dwarfs of a more moderate growth, they are occaſionally worked on quince Stocks, generally raiſed from ſuckers, layers, or cuttings as aforeſaid; for the quince-trees being low moderate growers, when uſed as Stocks for any kind of pears, they dwarf the trees pretty conſiderably, rendering them more proper for ſmall gardens, and for low walls and eſpaliers, or dwarf ſtandards; and the trees often commence a bearing ſtate ſooner than on ſtrong-growing pear Stocks: remarking however, this ſort of Stock is in more eſtimation for the melting pears, than the hard breaking kinds, being ſuppoſed to improve the fruit of the former, and render the latter ſtony; but the quince Stock at any rate, unleſs growing on a ſtrong moiſt ſoil, rarely furniſh ſuch proſperous pear-trees as the pear Stock, nor prove of ſo long duration.

Sometimes, alſo to form dwarf pears, white-thorn Stocks, raiſed from ſeed, were formerly in repute, but are very improper, as they have a bad effect in rendering the fruit ſmall and hard, and the trees are rarely proſperous for any long duration.

Therefore the pear Stock is greatly preferable to uſe for grafting or budding all the ſorts of pears for the general ſupply; obſerving however, as the goodneſs of a pear is often improved or diminiſhed by the nature of the Stock on which it is grafted, ſo it is of importance to uſe principally free Stocks raiſed from the kernels of the beſt ſummer and autumn pears, and being raiſed, if any among

among them aſſume a wild crab-like appearance, reject them, eſpecially for the prime pears, which ſhould be worked always on the fineſt free-ſhooting Stocks of the moſt cultivated-like growth.

And ſometimes to improve the quality of any particular choice kind of pears as much as poſſible, ſome double work them, i. e. graft the beſt ſorts into free Stocks in the ſpring, which ſhooting the ſame year, then about midſummer or ſoon after, bud the young ſhoots of the graft with buds of the prime ſorts of pear, ſuffering only the ſhoots from the budding to run up to form the tree: thus the breaking kind of pears are often rendered leſs hard and ſtony, and the melting property of others conſiderably improved; but this double working is not intended for general propagation.

Both the ſorts of Stocks for pears are eaſily raiſed by the methods above noticed, and as hereafter directed.—See PYRUS *Communis*.

For quinces (*Pyrus Cydonia.*)

Two ſorts of Stocks are occaſionally uſed for this tree, viz. that of its own kind, and the pear Stock raiſed, the quince Stocks from ſuckers and cuttings, &c. and the pear kinds from the kernels of any ſort of pears: but as all the varieties of quinces are ſo expeditiouſly raiſed the ſame with certainty by layers and cuttings, renders the raiſing of Stocks for grafting or budding them on, almoſt unneceſſary. See PYRUS *Cydonia*.

For plums *(Prunus domeſtica.)*

This tree is worked only upon plum Stocks, raiſed from the ſtones of any ſort of cultivated plum, and by ſuckers and layers thereof; as plums propagate alſo freely by theſe methods, and are certain methods of propagation to obtain any particular variety of free plum Stock when required; ſuch for inſtance, as the muſcle-plum Stock, which many prefer as the beſt Stock of all on which to work the finer kinds of plums, as generally producing very thriving and durable trees, raiſing it, not from ſeed which would vary exceedingly, but principally by ſuckers from the root of real muſcle plum-trees, or of thoſe worked upon the true muſcle Stock; or from layers alſo of the muſcle-plum tree: obſerve however, plums almoſt in general ſucceed equally well on any kind of free plum Stock; and therefore, the general ſupply may be raiſed from any ſort of plum, either by ſeed or ſuckers, &c. as may be convenient; as directed hereafter.

The plum will alſo grow upon the apricot and cherry Stock, but not thrivingly for any great duration.—See PRUNUS *domeſtica*.

For cherries (*Prunus Ceraſus.*)

The proper Stock for this tree, is that of the cherry kind only; viz. the great wild cherry Stock for large trees, the cultivated garden cherries for more moderate growths, and the bird cherry Stock for ſmall dwarfs; raiſed, the two former from the ſtones of the fruit, and the latter alſo by ſeed, or by layers and cuttings.

But as for general uſe, the wild black and red cherry Stocks, being ſtrong free growers, are preferable, on which to raiſe all common large ſtandard cherries particularly; alſo the larger dwarf-trees for high walls and eſpaliers; as theſe Stocks being of ſtrong hardy growth, generally produce larger, more hardy, and durable trees than the cultivated cherry Stocks; though in default of theſe wild Stocks, may uſe Stocks raiſed from any of the cultivated garden cherries, to raiſe moderate ſtandards and ſmaller dwarf-trees; it is however of importance to raiſe the general ſupply of large trees on the wild cherry Stock, for the reaſons abovementioned.

Sometimes Stocks of the morello cherry, as being but a moderate grower are uſed, on which to raiſe the ſmaller dwarf cherrry-trees for low walls and eſpaliers, or moderate ſtandards, for ſmall gardens, &c. but remarking of the morello Stock, that if raiſed from layers you will be more certain of having the real ſort in its naturally moderate growth.

And Stocks of the common bird-cherry (*Prunus pudus*), being the loweſt grower of the cherry kind, is uſed, on which to raiſe very dwarf cherry-trees, either to plant in forcing frames, or to pot for forcing, &c. are raiſed plentifully from cuttings, and have the effect of dwarfing trees worked thereon exceedingly, ſo as to bear fruit when but one or two feet high; and they ſhooting very little to wood, generally bear abundantly for their ſize.

Cherries will alſo grow upon plum, apricot, and laurel Stocks as being all of the ſame genus, but not proper for general propagation, only by way of curioſity or experiment.

All the varieties of cherry Stocks are raiſed with great facility by the methods

above hinted and hereafter exhibited.—See PRUNUS *Cerasus*.

For apricots (*Prunus Armeniaca.*)

The apricot proves the moſt durable on Stocks of the plum kind only, viz. common plum Stocks of any variety for all common wall, eſpalier, and ſtandard trees; and the black-bullace Stock for ſmall dwarfs; raiſed, the plum Stocks from the ſtones of any kind of cultivated plum, or by ſuckers from the root; and the bullace from ſeed, ſuckers, and layers.

But always chuſe the plum Stock on which to raiſe the general ſupply of apricots for common uſe, which ſucceed almoſt equally well upon Stocks of any kind of plum, though they probably may prove the moſt ſucceſsful on the muſcle-plum Stock, like peaches, &c. but as no great difference is diſcovered, we may uſe any kind of plum Stocks that can be the moſt readily obtained, on which to raiſe all our principal apricot-trees, for walls, eſpaliers, and ſtandards.

And the bullace Stock is only uſed occaſionally on which to raiſe very ſmall dwarfs for low walls, or to plant in pots, or in forcing frames for forcing.

Note, the apricot will grow on its own, and on peach and almond Stocks raiſed from the ſtones, but never ſo proſperous for any duration.—See PRUNUS *Armeniaca*.

For peaches (*Amygdalus Perſica*).

Several ſorts of Stocks are occaſionally uſed for peaches; viz. almond Stocks, peach, nectarine, apricot, and plum Stocks, all raiſed from the ſtones of the fruit, and the latter alſo by ſuckers and layers; but the plum Stock being the moſt hardy, is the moſt eligible for general uſe.

For the peach is not equally ſucceſsful and durable on all thoſe kinds of Stocks; on thoſe of the almond, peach, nectarine, and apricot, although they take freely, ſhoot fair and promiſing for ſome years, yet are frequently apt to gum exceedingly, and prove but of middling duration; ſo that the free plum Stock is preferable for all the ſorts of peaches and nectarines, as being productive of the moſt hardy, thriving, and durable trees; though it is remarkable, one ſort of plum Stock in particular, is generally preferable to all the others on which to work peaches, as producing the moſt proſperous trees, and improving the fruit; which is that of the muſcle-plum, formerly hinted, if raiſed genuine; not from the ſtones, for, as obſerved before, the ſeedlings run into many varieties very different from the original; but ſhould be raiſed real, from ſuckers or layers of the true muſcle-plum-tree, or by ſuckers from the roots of ſuch old peach, nectarine, plum, &c. as are worked on muſcle-plum Stocks, which generally ſend up plenty from the roots annually; planting them off at one year's growth into the nurſery to train for uſe: however, for want of a ſufficiency of this approved Stock, recourſe muſt be had either to ſeedling Stocks raiſed from the ſtones of the muſcle or any other kind of plum, or ſuckers, or layer Stocks of any of the plum varieties; but always giving preference to the true muſcle-plum Stock where it can be obtained.

Double Stocks or double working, is ſometimes uſed for the more delicate peaches, to improve their bearing and flavour of the fruit; and conſiſts of firſt budding in the common way, by inſerting buds of any ſtrong-ſhooting peach, almond, or apricot into a plum Stock; and the buds ſhooting out ſtrongly next ſummer, then upon the main ſhoot from the bud, perform the ſecond or final inoculation with buds of the approved ſort intended for propagation, ſuffering the ſhoots from the ſecond budding only to grow up and form the tree; and by this practice the delicate flavour of ſome ſorts of peach fruit is more certainly preſerved, and ſometimes improved.

For nectarines (*Amygdalus Nuciperſica.*)

The nectarine is worked upon the ſame Stocks as the peach, viz. almond, peach, nectarine, apricot, and plum; all raiſed as obſerved above for the peach-tree: preferring however, the plum Stock for general propagation, and if the true muſcle-plum Stock, as for peaches, it may improve the proſperity of the trees.—See the Stocks for peach trees above.

For almond-trees (*Amygdalus communis.*)

The almond-tree when raiſed for its fruit, the approved varieties may be budded into Stocks of any ſort of almond, peach, nectarine, apricot, or plum, raiſed from the ſtones, and the latter alſo from ſuckers, &c. but the trees are generally the moſt hardy and durable on plum Stocks.

For medlars (*Meſpilus Germanica.*)

About three or four different Stocks are occaſionally uſed, on which to raiſe the approved varieties of eatable medlars, viz. medlar Stocks, white-thorn, pear, and quince Stocks,

Stocks, raiſed, the three former from ſeed, and the latter expeditiouſly from ſuckers, layers, and cuttings; the white-thorn Stock is very commonly uſed for theſe trees, but free pear Stocks raiſed from the kernels of good ſummer or autumn pears are rather preferable for all the varieties of common medlar, which on theſe Stocks generally aſſume a more free growth, and produce the fruit in greater perfection.

For ſweet Service-trees *(Sorbus domeſtica.)*

The houſhold or ſweet ſervice when deſigned as a fruit-tree, have the approved varieties grafted or budded upon proper Stocks; either their own Stocks raiſed from the ſeed, or on pear or quince Stocks raiſed as mentioned juſt above for medlar and other trees; though the pear Stock is preferable to the quince on which to work this tree to have it large and durable.

For the wild maple-leaved Service berry-trees *(Cratægus torminalis.)*

This tree being ſometimes cultivated in the garden and orchard for its eatable berries; and to obtain or continue any particular good variety with certainty, they are occaſionally raiſed by grafting or budding, and the proper Stocks are either their own kind, or haw-thorn Stocks, raiſed from the ſeed; they will alſo take upon pear Stocks, &c.

For hazel nuts, filbert nut, &c. (*Corylus avellana*).

Any approved variety may be continued the ſame with certainty, by graſting and budding upon Stocks of the common nut-tree, raiſed from the nuts or ſuckers from the root; though as all the varieties may be readily encreaſed, and continued the ſame by layers, &c. with great facility and abundance, the grafting or budding is not commonly practiſed in their propagation, only in particular caſes, in default of layers or ſuckers of any particular good ſort of nut, and that cuttings or buds for grafting or budding, can be more readily obtained from neighbouring trees of the ſorts intended; and having raiſed a few trees by this method, they in two or three years furniſhing plenty of branches to raiſe a more plentiful ſupply by layers; and theſe layer-raiſed trees, being wholly the ſame top and root, ſuckers from the bottom are equally eligible as grafting and laying, for continuing any approved variety.—See CORYLUS *avellana.*

For orange-trees (*Citrus Aurantium.*)

The orange-tree is worked upon Stocks of their own kind only, viz. either any kind of orange, lemon, or citron Stocks, raiſed from the kernels of the fruit; though of the orange kinds, the Seville orange, as being a very free ſtrong ſhooter, is generally preferred for orange Stocks; but the lemon and citron being alſo free growers form very proper Stocks on which to raiſe any variety of orange. See CITRUS *Aurantium.*

For lemon and citron trees (*Citrus Medica.*)

Both theſe varieties are alſo budded or inarched upon lemon, citron, or orange Stocks, raiſed from the kernels of the fruit, as obſerved above for oranges. See CITRUS *Medica.*

Thus far is principally all the ſorts of Stocks commonly uſed for fruit-trees, that are either generally, or occaſionally raiſed by grafting and budding.

For the ſeveral other ſorts of fruit-trees, not mentioned in the above liſt of Stocks, ſuch as the vine, fig, mulberry, currant, gooſeberry, barberry, walnut, cheſnut, &c. in their ſeveral varieties, being, in the firſt ſix ſorts particularly, raiſed and continued the ſame with greater facility by layers, ſuckers, and cuttings, which renders the propagation by grafting and budding unneceſſary; and the walnut and cheſnut not ſucceeding perfectly by theſe methods to become large thriving trees, are raiſed from the nuts: however, any approved variety of moſt of the above-mentioned ſorts, may alſo be tried occaſionally by grafting and budding upon proper Stocks by way of experiment; and the eligible Stocks are principally thoſe of their own kind, raiſed ſome from ſuckers, layers, and cuttings; others alſo from ſeed, as exhibited in the culture of the reſpective ſorts, under their proper genera.

For foreſt and ornamental trees, flowering ſhrubs, &c.

As to the Stocks proper for ſuch foreſt-trees, ornamental trees, and flowering ſhrubs, &c. that are occaſionally raiſed by grafting and budding, either to improve or continue any particular variety, they are for the general part each worked on Stocks of its own kind, as obſerved above for the generality of fruit-trees; but as in theſe kind of trees, the variation of the ſeedlings being not ſo numerous and material as in the fruit-tree kind, they do not require to be ſo generally raiſed by graſting or budding, only for ſome particularly valuable variety, or any of peculiar property, ſuch as variegated, or other remarkable leaved kinds, double-

flowering variety, or other curious flowering ſorts, &c. that cannot be continued the ſame by ſeed, but only either by grafting or budding, or by layers and cuttings; though as the two latter methods are not convenient in all ſorts, recourſe is had to grafting and budding to encreaſe the above varieties with certainty of the kinds intended, without farther variation: working the reſpective ſorts principally each upon Stocks of its own kind, chuſing the ſtrongeſt free ſhooters, raiſed either from ſeed or ſuckers, &c. as mentioned in their culture, each ſort underits proper genus as obſerved on former occaſions.

*General Hints for Experiment.*

Sometimes for variety and curioſity in any ſort of fruit-trees and others, the ſame Stock is made to ſupport two, three, or more different varieties of fruit, grafted or budded, either all into the Stock, being previouſly trained with branches forking off for that purpoſe one for each graft, or by cleft, or crown-grafting ſingle large Stocks with two or more different ſorts; or in ſmaller ſingle Stocks by inſerting two or more different buds; likewiſe any Stock being ſingly grafted or budded, may inſert different ſorts into the ſhoots ariſing from the ſaid graft, or buds; and thus may have two, three, or more ſorts of apples, on the ſame root for curioſity; the ſame of pears, plums, cherries, and moſt other fruits, &c. that are chiefly ſpecies or varieties of the reſpective ſorts in the ſame genus, or that which is very nearly allied, as we have already exhibited; and in ſeveral inſtances, by the ſame rule and method, may have different ſorts of fruit upon the ſame Stock, as plum, cherries, and apricots all on a plum Stock, or peaches, nectarines, and apricots on the ſame, or on Stocks of their own kind; and pear, medlars, and quinces upon the pear Stock; alſo red and white currants, or currants and gooſeberries, both on a currrant or gooſeberry Stock; or white and red grapes on any vine Stock: likewiſe red and white roſes, or other different ſorts, upon any common roſe Stock; and the ſame of numerous other trees and ſhrubs, ſpecies and varieties of one genus; remarking however, this is not recommended for any general practice, but only for a tree or two of any particular genus or ſpecies, by way of experiment, variety, and curioſity.

*Method of raiſing the Stocks in general.*

With reſpect to the method of raiſing all the different ſorts of Stocks, it is occaſionally by ſeed, layers, ſuckers and cuttings, as hinted above in the liſt for each particular ſort.

By Seed.—Numerous ſorts of Stocks are eaſily raiſed from ſeed, conſiſting of the kernels and ſtones of the fruit, of the reſpective trees, ſuch as the kernels of the crab-apple, and all the other apple kinds; kernels of all the ſorts of pears; and the ſtones of plums, cherries, apricots, peaches, nectarines; the ſeeds or ſtones of medlars, ſervices, haws, &c. when deſigned for Stocks; all of which are to be obtained in autumn from their reſpective fruits when fully ripened; previouſly laying the larger fruits together in an heap, and bruiſe them; ſuffering them to lie ſome time to decay as the different ſorts may require, in order that the pulp may be more readily cleared from the kernels and ſtones proper for ſowing; or, the kernels of apples and pears may alſo be procured from any of the accidentally rotten fruits in the fruitery; and ſometimes both apple, pear, and crab kernels are occaſionally obtained from the cyder preſſes after the fruit have been preſſed for cyder, perry, verjuice, &c. but the ſtones of plums, cherries, apricots, and the like, muſt be procured from the fruits as above, as ſoon as they are ripe; which together with all the other ſorts, may be ſowed as ſoon as poſſible, each ſort ſeparate.

All the ſorts, both kernels, ſtones and other ſeeds, are to be ſowed in beds of common earth in the nurſery, either directly in autumn, or preſerved in ſand till February, and then ſowed.

Obſerving however, that for the general part, it is eligible to ſow them principally in autumn or early part of winter, as October, November, or December, unleſs the ground proves of ſuch a wet cold nature, as to endanger their rotting in winter; and that it ſhall ſeem neceſſary to preſerve them in ſand in a dry apartment until February, as before obſerved.

However, in any common moderately dry ſoil, it is adviſeable to ſow them at once in autumn, or as ſoon as they can be obtained, as it will be both leſs trouble, and may prove more ſucceſsful in forwarding their

their germination; and if the winter ſhould prove ſevere, the beds of the more tender kinds, as almonds, and peaches, &c. may be covered with dry litter to defend the ſeed from the froſt.

The method of ſowing all the ſorts is in beds of any common light earth in the open nurſery or ſeminary, ſowed either by bedding in, or in drills, as below. — See NURSERY.

Having however previouſly digged the ground, then if intended to bed in the ſeeds, divide the ground into four-feet-wide beds, with foot-wide alleys between; and then with a rake or ſpade trim the earth from off the top of the beds evenly, into the alleys from about an inch, to an inch and half, or two or three inches deep, according to the ſize of the different ſeeds; this done, ſow the ſeeds all over the ſurface moderately thick, and after preſſing them all evenly down into the earth with the back of the ſpade, cover them in with the earth from the alleys evenly, the depth as above; the kernels of apples, crabs, pears, &c. near an inch deep, the ſmaller ſtones about an inch and a half, and the larger ſorts full two inches deep. But if it is deſigned to ſow them in drills proceed thus, having digged the ground, and formed it into four-feet-wide beds as above adviſed, then draw drills with an hoe, either lengthways or croſs the bed, from one to two or three inches deep, and ſix inches aſunder at leaſt, ſowing the ſeeds, &c. in the drills, and directly cover them in with the earth the depth of the drills. — See SOWING of SEED.

After having performed the ſowings as above, if the ground is much infeſted with mice or other deſtructive animals which often attack theſe kind of ſeeds in winter, it is adviſeable to ſet different ſorts of traps and baits, for their deſtruction.

The different ſeeds being thus ſowed, they will all germinate freely in the ſpring, and ſoon come up the ſame ſeaſon; obſerving previous to the ſprouting or appearance of the ſeedlings above ground, that if the ſurface of the bed proves moſſy, or that the top is hard bound or caked, it is beneficial culture to ſtir the ſurface lightly with a ſmall iron rake, alſo if harſh dry weather prevails, to give frequent moderate waterings both before and after the plants are up; repeating the waterings occaſionally in dry weather all ſpring and early part of ſummer, to encourage a free ſtrong growth; being likewiſe careful to keep the beds very clean from weeds by diligent hand weedings; and by thus giving every encouragement of culture, the ſeedling Stocks will grow ſo freely all ſummer, as by autumn or ſpring following, will be moſtly of proper ſize to plant out into nurſery-lines in the open quarters, in rows two feet aſunder, to remain for grafting and budding; though if they have made but middling progreſs this firſt ſummer in the ſeed-bed, and are rather ſmall and weakly, may plant out only the ſtrongeſt, leaving the reſt growing until next autumn, when they will be all of full ſize for planting out wholly into the nurſery quarters.

Therefore when the Stocks are of due ſize for removal from the ſeed-bed, chuſe for their reception ſome of the open quarters of the nurſery, preparing the ground by trenching two moderate ſpades deep; then forking the ſeedlings up out of the ſeed-bed, ſhorten any perpendicular tap-root and long ſtragglers, but leave all their tops entire, and then proceed to plant them in lines, either by trench-planting, ſlit-planting, or dibble-planting, as the ſize of the plants admit (ſee PLANTING), marking out the rows two feet aſunder, and ſet the plants one foot or fifteen inches apart in each row, all in an upright poſition; and having planted one row, then tread the earth gently all along cloſe to the roots of the plants, to fix them firmly in the earth all evenly in a ſtrait range and erect poſture; and ſo proceed row and row till all is planted, levelling the ſurface of the ground between all the rows with your ſpades.

As to their future culture till grafted or budded, it conſiſts in occaſional waterings the firſt ſpring, hoeing the ground every ſummer to kill weeds; digging between the rows annually in winter or ſpring; and of training the Stocks each to one ſtem, preſerving their top always entire; but trimming off ſtrong laterals below, to encourage the ſtrength of the main ſtem, and the aſpiring of the top as faſt as poſſible; whereby they will be fit for grafting or budding in, from one to two or three years after planting.

They are generally of proper ſize for working, when from about the ſize of a large gooſe-

goose-quill already obſerved, to the thickneſs of a man's little finger or a little more; but the ſooner they are worked after having obtained due ſize, the better they will ſucceed, and the ſooner you will have them form trees of the ſorts intended. — See GRATFING and INOCULATION.

But ſuppoſing the Stocks to have ſhot freely the firſt ſummer after planting out from the ſeed-bed, many of them will probably be of due ſize to graft the following ſpring and ſummer, at five or ſix inches height, to form dwarfs for walls and eſpaliers, &c. or even in ſome ſorts, for full or half Standards; provided the firſt main ſhoot from the graft or bud is trained up ſingly, two or three years to form the ſtem, of from four or five, to ſix or ſeven feet ſtature: however, if the Stocks have growed but moderately the firſt ſeaſon, and that they are not generally in a condition for the operation of grafting or budding, let them have another year's growth, or till arrived to the before-mentioned ſize, which may be ſufficient for dwarf-trees; alſo occaſionally for ſtandards, when the graft or bud is to form the ſtem, as above obſerved; but when deſigned for ſtandards, and the Stock to form the ſtem, they muſt be permitted to ſtand two or three years longer, trimming off ſtrong ſhoots below, and ſtill preſerving the leading top ſhoot entire to continue the elongation of the ſtem to an eligible ſtature, to receive the graft or bud at five or ſix feet height for full ſtandards, and three or four for half ſtandards; ſo that theſe ſtandard Stocks being arrived to about ſeven feet height for full, and five or ſix feet for half ſtandards, and of the before-mentioned thickneſs at top, in the place where the graft or bud is to be inſerted, they are of due ſize for working.

By Suckers.—Several ſorts of fruit and foreſt-trees, &c. furniſh many ſuckers from the root annually, very proper to be tranſplanted for Stocks; ſuch for inſtance, as codlins, plums, and quinces; alſo peach, nectarine, and apricots on plum Stocks, pears on quince Stocks, any ſort of apples on codlin Stocks; likewiſe moſt ſorts of elms, and many other foreſt and ornamental kinds. And the ſuckers of all theſe trees being planted off at one year's growth in autumn or winter, is a very expeditious and eligible method of raiſing ſeveral ſorts of Stocks; as that after being tranſplanted into the nurſery, they often in one year commence proper Stocks for the reception of grafts and buds; and ſometimes many of them will be fit for budding in the ſummer following at the proper budding ſeaſon, or for grafting the ſpring after.

Likewiſe in ſome inſtances, ſuckers afford an opportunity of raiſing Stocks of any particular variety required with certainty, ſuch as the muſcle-plum for peach Stocks, codlin for dwarf apples, and the like particular kinds; for when the trees productive of the ſuckers are either wholly top and root of the variety intended, or that they form Stocks to other trees, the Stock and root ſtill remaining of the intended ſort: and in either caſe, all the ſuckers prove invariably the ſame as the parent-tree; but this is only to be particularly regarded when any particular variety of Stock is required; in other caſes may uſe ſuckers of all other fruit-trees, &c. indifferently for Stocks.

They are generally fit to take up for the purpoſe of Stocks when of one year's growth, about the ſize of a tobacco-pipe or but little bigger, and ſhould be collected in autumn or early part of winter; taking them up as well rooted as poſſible, cutting off all knots or knobbed woody parts of the old roots that may adhere to their bottom, trim ſtraggling fibres, and cut off all ſide-ſhoots from the ſtem, then plant them in rows two feet aſunder, and one foot diſtant in the lines; treading the mould gently to their roots, and finiſh the work by levelling the ſurface between the rows: thus they will readily take root, and in ſpring ſoon ſhew ſigns of free growth.

Then as to culture till grafted or budded, it is nearly the ſame as the ſeedling Stocks, keeping them clean from weeds in ſummer by hoeing; and probably ſome of the ſtrongeſt ſhooters may be fit to bud in July or Auguſt following; though the general part will require two years growth before they are proper for working, ſtill continuing them all to one ſtem, by timely diſplacing ſtrong laterals; and preſerve their top or leading ſhoot generally entire until grafted, &c. which may be performed when they are of the ſizes before mentioned.

By Layers.—Some ſort of Stocks, both of fruit and other trees, may alſo be raiſed occaſionally by layers; and when any particular

ticular variety of Stock is required, ſuch as the paradiſe Stock for apples, muſcle-plum for peaches, &c. they may be obtained of the real ſort always with certainty, by layers of the ſhoots of ſuch trees as are wholly of the intended ſort; but as this method of raiſing Stocks would be attended with great trouble for general grafting and budding, it is only practiſed occaſionally when a ſufficiency of any particular ſort of Stock intended, cannot be obtained by ſuckers, &c. ſo that in autumn or winter, chuſing the young ſhoots either of ſuch trees whoſe branches naturally grow near the ground, or have been cut down low while young, to force out branches near the bottom, furniſhing ſhoots properly ſituated for laying; which being ſlit-layed in the common method, they will be rooted by autumn following, and fit to plant into the nurſery; managing them as directed for the ſeedling and ſucker Stocks.

By Cuttings.—As ſome ſorts of trees proper for Stocks, grow freely by cuttings; ſuch as codlins, quinces, bird-cherry, paradiſe Stock, &c. a ſupply of Stocks of theſe ſorts are ſometimes raiſed by this method; chuſing cuttings of the year's ſhoots in autumn, plant them in the nurſery in a ſomewhat ſhady border, giving occaſional waterings the following ſpring and beginning of ſummer in dry weather, and they will be well rooted by next autumn, then tranſplanted in nurſery-rows two feet aſunder, managing them as the others.

Remarking of the Stocks in general, raiſed in either or by all the above methods; that as we formerly obſerved they muſt always be continued to one upright ſtem, with their top entire; except any ſhould aſſume a ſtunted or crooked growth, in which caſe, head them down to the ground in ſpring, they will puſh out ſtrong from the bottom the enſuing ſummer, training them to one ſtem, and with their leading top-ſhoot entire as aboveſaid; and according as all the ſorts advance in growth, diveſt them of ſtrong lateral ſhoots below, repeating it particularly in the taller ſtandard Stocks to encourage their upright direction more expeditiouſly to the proper grafting and budding height.

With reſpect to the different methods of grafting and budding the ſeveral ſorts and ſizes of Stocks, the grafting them is occaſionally performed different ways according to the ſize of the Stock; and the budding them is performed only by one method to all ſorts; remarking as to grafting, the method called whip-grafting is conſiderably the moſt eligible for general practice, and is always performed upon ſmall Stocks: likewiſe budding is alſo the moſt ſucceſsfully performed upon ſmall or moderate ſized Stocks; for example, young Stocks from the ſize of a large gooſequill, to the thickneſs of the little finger, in the part where the graft or bud is to be inſerted, are of the moſt eligible ſize for general working; for all nurſery Stocks, performed either by whip-grafting, or by inoculation as the different trees may require: though cleft grafting is alſo occaſionally performed on ſmall Stocks, but not ſo ſucceſsfully as whip-grafting, ſo is more commonly practiſed for ſuch Stocks as are too large for that method of grafting; but large Stocks of an inch or more diameter, ſucceed very well by cleft grafting; alſo ſometimes tolerably by budding, but not in general ſo effectually as ſmaller Stocks, &c. above mentioned. And ſuch Stocks as have ſtood to grow very large, perhaps two or three inches or more in diameter, may alſo be grafted occaſionally with tolerable ſucceſs, but do not ſucceed by inoculation: and crown-grafting is generally the beſt method for ſuch large Stocks; ſometimes alſo cleft-grafting is practiſed by making ſeveral clefts round the top of the Stock, and inſert one graft in each, though the working of theſe very large Stocks is the moſt generally, and ſucceſsfully practiſed when they are growing in the places where they are finally to remain; but for the methods of performing the operations of grafting and budding the various ſorts of Stocks for raiſing the ſeveral kinds of dwarf and ſtandard trees, ſee GRAFTING and INOCULATION; alſo the ſeveral ſorts of trees raiſed by theſe methods, as apples, pears, plums, peaches, &c. each in its reſpective genus.—Alſo DWARF TREES, STANDARD TREES, WALL and ESPALIER TREES.

After grafting and budding the ſeveral ſorts of Stocks, they may be then ſaid to commence trees of the name of the reſpective ſorts with which they are worked, eſpecially after the graft and bud begins to ſhoot, which growing up into branches, forms the new tree of the ſort intended.

STOOLS,

STOOLS, to furniſh layers.

Stools are headed-down trees and ſhrubs in the nurſery, appropriated for the production of an annual ſupply of lower ſhoots or branches near the ground, eligibly ſituated for effecting the propagation of the reſpective ſorts by layers. See LAYING.

Such trees and ſhrubs as are deſigned for Stools to furniſh layers for the work of propagation, are generally headed down to the bottom in the nurſery, &c. in order to force out more effectually a plenteous ſupply of branches near the ground, to afford layers conveniently ſituated for laying down in the earth as aforeſaid; which being layed in autumn, winter, or ſpring, they ſtriking root in a year or two; and each layer commencing a diſtinct plant, are planted off into the nurſery in autumn following; the Stools remaining, ſend out a farther ſupply of lower ſhoots the following ſummer for laying as before; and thus the remaining Stools continue affording a plentiful ſupply of branches from the bottom, fit for laying annually, or every other year at leaſt; and hereby propagate the ſorts intended with great facility and abundance.

Therefore, as many ſorts of trees and ſhrubs are with great facility propagated by layers, a ſufficient number of the reſpective ſorts in the nurſery, &c. ſhould be appropriated for Stools, in proportion to the ſupply required of the ſorts intended, whether in the public nurſeries for ſale or for private plantations; chuſing for this purpoſe ſome ſtrong young trees and ſhrubs, which being planted in the nurſery, &c. at from five or ſix, to eight or ten feet diſtance, according to their ſize or nature of growth, and after having remained a year or two till firmly rooted, and acquired ſome ſubſtance, then all thoſe of the tree kind, or ſuch others as run up with tall ſtems without affording lower branches near the ground for laying, ſhould in autumn, winter, or early in ſpring, be headed down within a few inches of the ground; by which operation they in ſummer following will puſh out from the bottom plenty of ſtrong young ſhoots commodiouſly placed near the ground for laying, which may be performed the ſucceeding autumn or winter, or if you wait till the ſecond autumn, the firſt ſhoots ſending out many lateral or ſide ſhoots the enſuing ſummer, and thereby probably furniſh five or ten times more ſhoots for laying; and theſe ſmall laterals are often better adapted for rooting, than the firſt vigorous ſhoots that riſe immediately from the ſtool, and each of which layed will form a new plant; however you will order this as it ſhall ſeem convenient, as ſome ſorts may afford a ſufficiency for laying the autumn after they are produced; others may require to grow till the ſecond or third autumn before they are eligible for laying.

As to the method of performing the operation of laying, it being fully explained in all the various ways in practice under its proper head, we will not repeat it here, ſo refer the reader to the article LAYING.

In moſt ſort of Stools where the laying is performed in autumn, or early in winter, the layers are for the general part well rooted in one year, commencing proper plants fit for ſeparation from the Stools in the autumn following, in order for planting out in nurſery rows to be trained for the purpoſe intended; though ſome very hard-wooded ſorts require two ſummers growth in the layer-bed before they are ſufficiently rooted; on the other hand, ſome ſorts being laid in ſummer in the young ſhoots of the year, often effect their rooting freely the ſame ſeaſon, fit for planting off the following October.

However, in all ſorts it is proper to examine the layers in the autumn after they are layed; and all thoſe ſorts that are rooted ſhould then be taken off, ſeparating them with a knife from the Stools, with as much root as poſſible; and directly planted in nurſery-rows a foot or two aſunder; and the more tender ſorts plant in pots for moving under ſhelter in winter, as directed for each ſort under its reſpective genus; then when the layers are all thus planted off, let the remaining Stools be trimmed and dreſſed as below, for providing a freſh ſupply of layers the ſucceeding year.

Every year ſoon after the layers are ſeparated from the Stools, the latter ſhould be dreſſed, which conſiſts of trimming the head by cutting off all parts of old branches and ſcraggy ſtumps within an inch or two of the main Stool; and then dig and level the ground neatly about and between the whole, and in ſpring and ſummer, give occaſional hoeings in dry weather to deſtroy weeds; thus repeating the ſame work of trimming,

trimming, digging, and hoeing every year; and the Stools ſtill remaining, ſupply you with plenty of layers for years to come.

But ſometimes Stools for layers are formed occaſionally of trees, &c. that are conſiderably grown up, not having been headed down to form low Stools, but whoſe branches are of ſome conſiderable height from the ground; and in which caſe, the branches, if flexible and long enough, are bowed down to the earth; or if inflexible and too ſtubborn to bend, are ſplaſhed by making a gaſh or cut on the upper ſide; or if too large for ſplaſhing, or that the nature of the wood will not bear that operation, they are thrown on their ſides by opening the earth about the roots, looſening or cutting thoſe on one ſide to admit of lowering the head ſufficiently for laying the branches in the ground.

Sometimes alſo Stools being formed of grown-up trees, whoſe branches are too high for laying in the full ground, a temporary ſtage or ſcaffold is erected on which to place pots or tubs of earth for the reception of the layers.—See LAYING.

STOVE, or Hot-houſe.

Stoves in gardens are ranges of buildings conſtructed with brick walling behind on the north, and fronted and roofed wholly with glaſs ſaſhes next the ſouth, full upon the ſun; furniſhed internally with a pit or long, wide, and deep cavity for a bark hot-bed; and with flues round the inſide of the walls for fires: the whole calculated to produce a certain temperature of heat at all ſeaſons, peculiarly adapted to the culture of the tendereſt exotic plants from the hot parts of the world; alſo for forcing various plants, both hardy and tender, into flower and fruit, &c. at an early ſeaſon.

Formerly, before the uſe of bark-beds was introduced, all Stoves or Hot-houſes were worked by fire heat only, hence they obtained the name of Stoves.

Theſe Stove departments are generally conſtructed in an oblong manner, ranging in a ſtraight line lengthways nearly eaſt and weſt, with the glaſs front, and top, full upon the ſouth ſun, or inclining a little to the ſouth-eaſt; and in dimenſions, may be from fifteen or twenty, to fifty or an hundred feet long; by twelve or fourteen, to ſixteen feet wide or more in the clear, and from ten to fourteen feet height commonly in the back wall, by five or ſix in front, including the wall, and upright glaſs-work together; and with the whole roof over-head ſloping to the ſouth entirely of glaſs-work, ſupported on proper croſs bearers.

Obſerving however, as to its general ſtructure, a wall of brick-work is firſt formed all round, raiſed behind from ten to twelve, or fourteen feet height, as juſt obſerved; and only two or three feet in the front and both ends, on which to ſupport the glaſs-work; previouſly forming the furnace or fire-place of the flues near the foundation of the back wall outward, at one or both ends according to the length of the building, or may be in the back part of the end walls; the flues, for conducting the fire-heat, to be ranged internally cloſe along the inſide of the back wall, &c. above one another: but as before noticed, the front and end walling is raiſed only from about one to two or three feet height, for the ſupport of the timber framing for the upright glaſſes, nearly head high all along the front, both ends correſponding; a door-way for entrance being formed at one or both ends near the back wall; finiſhing the timber framing of the top or roof over-head in one continued ſlope, from the top of the back wall to that of the crown timber of the front, erecting croſs bars for the ſupport of the ſlope ſaſhes in two or more tiers ſliding one over the other quite home to the crown timbers behind; having no dead roof or cieling in the back part as ſometimes practiſed, but wholly of glaſs to admit the rays of light, &c. equally in every part; all the glaſs-work, both front and top ſaſhes being made to ſlide open occaſionally to admit air, &c.

Within ſide is formed the pit or cavity for the bark bed, and flues for the fire-heat; the pit being ranged nearly the length of the building, ſix or eight feet wide or more, and three deep; either ſunk a little, or raiſed the greater part above ground, nearly equal to the outer front walls, and formed by a ſurrounding thin brick wall, and in which is made the bark hot-bed, both for the reception of tender plants plunged therein in pots, and to aſſiſt in warming the internal air; next to the bark-pit wall, is a path or walk two feet wide generally continued all round; then along againſt the inſide of the main walling are continued the flues conſtructed of brick-work on edge; each flue only eight or nine inches wide in the clear, by two or three bricks on edge deep, ranged horizontally one over the other the whole length

of the back wall, in three or four returns communicating with each other; continued alſo along the end and front walls in one or two ranges, to be uſed occaſionally; furniſhed with a regulator accordingly, to ſlide open and ſhut as required; the whole proceeding from the firſt lowermoſt flue, which communicates immediately from the furnace or fire-place, without ſide, behind, in the bottom, either of the back wall at one end, or in the back part of the end walls as before hinted, and as the ſituation admits; or if very long ſtoves of more than forty feet length, two fire places are requiſite, one at each end; each having its ſet of flues ranging half way; each ſet of flues terminating in an upright chimney at the ends of the back wall without, to diſcharge the ſmoke after having ſpent its heat in its paſſage through all the returns, for the purpoſe of heating the whole ſufficiently to warm the air within; for in winter and early ſpring, fires being made in the furnaces every night, the ſmoke and heat paſſing immediately into the firſt bottom flue, thence quickly tranſmitted through all the others in their ſeveral returns, heating them in its paſſage ſo effectually, as to warm the internal air in the moſt agreeable manner, which together with the bark-bed heat, produces a temperature of warmth proper for the growth of all ſorts of tender exotics, both woody, herbaceous, and ſucculent, from the hotteſt parts of the globe; as ſome ſucceed principally in the bark-bed, others beſt upon the top of the flues and ſhelves, &c. as is generally noticed in the culture of the reſpective ſorts under their proper genera; hinted alſo in the article STOVE PLANTS.

The above is a general ſketch of the dimenſions and formation of a common Stove or Hot-houſe for general uſe, proper for the culture of pine apples, and numerous other tender exotics; as well as for forcing flowers, fruits, &c. but for farther particulars of its conſtruction, ſee the article of its *General Structure*.

But ſome Stoves are built conſiderably more lofty and capacious than the above-hinted dimenſions, when intended to cultivate the taller exotics in the greateſt perfection poſſible, according to their nature of growth: and for which purpoſe there are Stoves erected twenty or thirty feet high in the back wall, with width in proportion; by only five or ſix feet height in the front glaſſes, in order to ſuit low as well as high plants; and with the roof ſloped quite from the top of the back wall to the front, and wholly of glaſs-work, having a capacious bark-pit within, formed moſtly towards the front; behind which is ſometimes a border of earth to receive tall plants in the full ground; ſo in this kind of Stove may cultivate exotics, &c. from the loweſt to almoſt the higheſt ſtature, placing the ſhorteſt growth forward, and the talleſt behind, according to their ſeveral gradations of height.

However, theſe very lofty and capacious Stoves are not recommended for general uſe, they being both very expenſive in erecting, requiring alſo a great force of fire-heat to warm the internal air in winter; and not ſo well calculated for the growth of the general run of exotics, as Stoves of a moderate height: but perſons of fortune and curioſity can indulge their fancy in this reſpect as they think proper.

But the common Stove firſt deſcribed, of from ten to twelve or fourteen feet high behind, and fourteen in width, by five or ſix feet height in front, will prove ſufficient to raiſe a great collection of curious tender plants of middling growth.

Thus in theſe Stove departments, by the conſtant moderate heat of the bark-bed obtained the year round, and occaſional heat of the flues in cold weather, we are able to produce ſuch a temperature of growing warmth in the internal air equally throughout the building, as is eligible for the growth of all ſorts of tender exotics from the hotteſt regions of the Eaſt and Weſt Indies, &c. which in this country could not poſſibly exiſt, in winter eſpecially, without the conſtant ſhelter of ſuch a conſervatory, aſſiſted by the above artificial heats of bark hot-beds and actual fire, by which we can imitate the hot climates of Africa, Aſia, and America ſo nearly, as to raiſe the plants of thoſe countries and make them flouriſh as in their native ſoil, and ſome of them made to yield their fruit in high perfection; exemplified in the *ananas* or pine apple particularly.

Likewiſe, by the aid of Stoves we are enabled to forward many of our hardy plants to early perfection, ſuch as various ſorts of curious flowers, fruits, ſallads, kidney beans, ſtrawberries, &c. probably one, two or

or three months ſooner than they could poſſibly be obtained in the open ground.

Alſo many ſorts of ſeeds, cuttings, and layers of exotics are made to grow freely in the bark-bed of the Stove, that without ſuch aids would not grow at all in this country; likewiſe, even cuttings, &c. of many curious hardy plants that root tolerably in the full ground, may be facilitated very conſiderably in their rooting by the Stove bark-bed.

*Of the different ſorts of Stoves.*

There are however, different ſorts of Stoves uſed occaſionally for different purpoſes, viz. a Bark Stove for common uſe, being accommodated both with a bark-bed and flues: a Dry Stove for ſome particular very ſucculent plants, &c. is furniſhed only with flues for fires, and no bark bed: a Forcing Stove purpoſely for forcing hardy fruits, flowers, &c. to early perfection; being conſtructed, ſome both with bark-bed and flues, and ſome only with flues and no bark-bed. See each ſort deſcribed below under their reſpective heads; BARK STOVE, DRY STOVE, and FORCING STOVE.

BARK STOVE.

The Bark Stove is ſo called, as being furniſhed with a pit for a bark-bed, as well as with flues for fire-heat; its general conſtruction has already been deſcribed; and is the moſt univerſally uſed, as the moſt eligible Stove for the general culture of all kinds of the tendereſt exotics, as well as for forcing hardy plants, flowers, and fruits occaſionally to early perfection; for the bark-bed being deſigned to effect a conſtant moderate moiſt heat the year round; and the flues are uſed occaſionally for fire-heat in winter, or during the cold weather, to produce an additional warmth in the internal air, as may be requiſite at that ſeaſon; the bark-bed being formed of that uſeful material tanner's bark, commonly called tan, (ſee BARK BED); and being made the whole width, depth, and length of the bark-pit, is productive of a uniform moderate growing heat of long duration, peculiarly adapted for the immediate reception of many of the tendereſt exotics, that require to be conſtantly plunged in their pots in the bark bed; ſuch as the pine-apple, &c. in order to enjoy the benefit of that durable, moiſt, bottom heat about their roots, peculiar to bark hot-beds only, whoſe heat alſo evaporates and warms the air of the Stove at all times; and when the cold in autumn and winter commences, the bark-bed alone not producing a ſufficient temperature of heat to warm the internal air effectually, fires are made in the furnace of the flues every night, alſo on days occaſionally during the winter ſeaſon, to produce an additional internal heat, as before obſerved; ſo as the whole may both effectually keep out froſts and the effects of cold damps, and ſupport a conſtant regular temperature of heat within adapted to the nature of the plants of this department; being generally directed in this by a well graduated botanical thermometer placed conſtantly in the Stove, diſtant from the fire-place, and as much in the ſhade as poſſible, that neither the fire nor ſun may effect it, and only raiſed by the air of the houſe; ſupporting always ſuch a ſtate of heat, as to raiſe the ſpirit in the tube to the degree marked *ananas*, the ſtandard for pine-apple Stoves, not exceeding five or ten degrees under or over that ſtandard; which thermometers are certain guides to regulate the proper growing heat requiſite for the culture of Stove exotics in this country.

There are hardly any exotics from the hotteſt parts of the world, either woody, herbaceous, or ſucculents, but may be cultivated in this kind of Stove (Bark-ſtove) by placing them in different ſituations as their natures may require; and many ſorts of hardy plants, forwarded in growth, both eſculents, flowers, and fruits.

In the arrangement of the plants in this Stove, ſome require the bark-bed, others ſucceed in any part of the houſe; and others, ſuch as the ſucculents, require the drieſt ſituation near the flues: all the more tender, herbaceous, and ſhrubby plants, natives of the hotteſt countries generally ſucceed beſt plunged in the bark bed; ſuch as the *ananas*, or pine apple; *anacardium*, or caſhew-nut; cocoa-nut tree, and many others: though many ſorts, both herbaceous and woody, ſucceed well enough in any part of the Bark Stove; and moſt of the ſucculents particularly, may be ſtationed moſtly on the top of the flues or ſhelves out of the way of moiſture, as being of themſelves naturally very replete with humidity. And as to many hardy plants deſigned for forcing, ſuch as ſtrawberries, kidney beans, and various ſorts of flowers, &c. that being potted, may be placed upon ſhelves, or on the parapet wall of the bark-bed; but the nearer the glaſſes

the better, particularly the ſtrawberries; but may raiſe good early kidney beans in almoſt any part of the Stove; though when intended to forward any ſort of flowers, ſuch as roſes, pinks, &c. or any bulbous flowers as early as poſſible, may plunge ſome in the bark-bed, the others placed upon ſhelves, &c. will ſucceed them: thus in this kind of Stove, beſides its uſe for raiſing pines and other tender plants, may forward numerous hardy plants both for uſe and curioſity.

DRY STOVE.

This is called a Dry Stove, becauſe it is furniſhed only with flues for fires and no bark-bed; and conſequently produces a more dry heat in the air within, than the bark Stoves; intended however, principally for the culture of ſome very ſucculent tender exotics of parched ſoils, that require to be kept always dry; though this was the firſt invented Stove for general uſe, before the uſe of bark-beds was introduced and brought to ſuch perfection in Stoves, where, by their moderate, durable, moiſt heat we are able to cultivate moſt ſorts of tender exotics generally in greater perfection than in dry Stoves; in which by the conſtant fire-heat all winter, night and day the fibres of the roots are ſubject to dry too faſt, and prove injurious to many ſorts of plants that are not of the very ſucculent tribe; however, ſome perſons who cultivate full collections of exotics, erect dry Stoves in which to depoſite the moſt ſucculent plants ſeparate, for fear the other plants which perſpire more freely, ſhould occaſion a damp air in winter, and be imbibed by the ſucculents, and injure them, as being impatient of moiſture in that ſeaſon particularly.

In this kind of Stove ſome moveable ſtands, or ſhelves are erected above one another, theatre-ways, on which to place the pots of plants, ſuch as the tenderer ſorts of aloes, cereuſſes, euphorbiums, melon-thiſtle, and other very tender ſucculent plants, &c.

FORCING STOVE,

Is intended principally for forcing various ſorts of hardy flowers and fruits, &c. to early perfection; ſome Forcing Stoves being deſigned entirely for flowers, as is common about London, to force large quantities of early roſes, pinks, and numerous other flowers for Covent-Garden market, where they fetch a very great price at an early ſeaſon. Other forcing Stoves are intended principally for fruit-trees, and ſome ſerve both for forcing flowers and fruits; ſo that theſe forcing Stoves conſiſt of two kinds, viz. a bark Forcing Stove being furniſhed both with a bark-bed and flues; a fire Forcing Stove having only flues for fires and no bark-bed.

The former of which, the bark Forcing Stove, is conſtructed like a common bark Stove already deſcribed, being furniſhed with a pit for a bark-bed to receive the pots of flower-plants intended for forcing, and with flues for fire-heat occaſionally; and ſometimes is formed capacious enough in width to admit of a border of earth behind the bark-bed next the back wall; ſometimes alſo, a ſmall one in front, both of which ſerving for fruit-trees, to be planted in the full ground; ſuch as cherries, peaches, apricots, &c. for early forcing; and the bark-bed is for receiving various ſorts of flower plants in pots in winter, for forcing into bloom early in ſpring; ſuch as the fineſt roſes, honeyſuckles, pinks, narciſſus, early tulips, and other flower plants, both ſhrubby, herbaceous, and bulbous, that may be required early in flower; alſo may forward any curious tender annual flowers in the bark-bed, ſuch as balſamines, &c. likewiſe may have pots of ſtrawberries, dwarf cherries, and other ſmall fruits plunged either in the bark bed, or placed any where towards the glaſſes; alſo pots or boxes of kidney-beans, ſallading, &c.

Obſerving, the ſeaſon to begin forcing or fire-working this Stove, is principally from about Chriſtmas to Candlemas, according to the earlineſs the flowers and fruits may be required; having the plants intended for forcing, previouſly potted either in the preceding ſpring or autumn, and in winter ſheltered from ſevere froſt till the forcing time arrives; but the ſhrub and tree kinds in particular, if potted the former year, to be well rooted and eſtabliſhed in the pots will be an advantage; remarking, the fruit-trees ſhould all be previouſly trained in the open ground to a bearing ſtate; then thoſe intended for the borders of earth behind the bark-pit, &c. may be planted fully therein early in autumn, without being potted; ſome of which, ſuch as peaches, nectarines, apricots, &c. to be there trained as wall-trees, others as low ſtandards, particularly cherries. And vines planted alſo againſt the front without-ſide, may be trained in; as directed below in the fire Forcing Stove.

That

That therefore, the forcing ſeaſon being arrived; having previouſly prepared the bark-bed accordingly, and plunged the plants you intend therein, alſo many ſmall kinds, ſuch as pinks, ſtrawberries, and any other low flower plants, &c. in pots placed upon ſhelves near the front and top glaſſes; and the fruit-trees being ſome in pots, placed any where the moſt convenient, others planted fully in the borders, if any; they will all ſoon be ſet in motion by the bark-bed heat; afterwards begin alſo making moderate fires on cold nights, likewiſe on days occaſionally, in very ſevere weather, to ſupport a conſtant proper warmth to continue the plants always in growth moderately; and thus may obtain various flowers and fruits two or three months before their natural ſeaſon in the open air.

The other kind of Forcing Stove, worked by fire-heat only, is furniſhed with flues and no bark-bed, but otherwiſe conſtructed like any other common Stove, having flues all round the inſide walls for fire-heat; and is deſigned principally for forcing fruit-trees, having the whole bottom ſpace within formed of good rich earth full two feet deep, in order to plant the fruit-trees entirely in the ground to remain; an alley or walk being either formed next the back wall, or carried along the middle, or continued quite round the back and front, allotting a ſmall border however cloſe along the back and front, for the reception of the choicer fruits to be trained as wall-trees; and the main middle ſpace for ſtandards of moderate growth.

Here may be planted for forcing, the beſt ſorts of apricots, peaches, nectarines, cherries, plums, vines, and figs; likewiſe, any ſmall fruit-plants, as gooſeberries, currants, raſpberries; alſo tufts of ſtrawberries. All of which being firſt trained in the open ground to a bearing ſtate.

For in this kind of Stove, having the whole bottom ſpace formed of good rich earth as before obſerved, it admits of planting the trees, in the full ground; peaches, nectarines, apricots, grapes, and figs principally againſt the back wall and front, and trained to a trellis as wall-trees; others, ſuch as cherries, are planted as ſtandards, both moderate full ſtandards, half ſtandards, and dwarfs, ranged in lines from the back to the front, the talleſt behind, and the loweſt forward; and between them may have ſmaller plants, planted alſo in the ground; alſo pots of ſtrawberries and low flowers, upon ſhelves near the glaſſes: and vines being alſo planted without ſide, cloſe againſt the front wall, are drawn in through a ſmall hole made for each, either in the wall, or in the timber of the front erections; and the branches within are trained up to the inſide of the ſlope glaſs upon trellis work, where they often produce abundance of fine fruit at an early time.

This kind of Stove is worked entirely by fire-heat, and the ſeaſon to begin forcing or make the fires, is January or early in February, continuing it moderately every night during the cold weather in winter and ſpring, to forward the different fruits to as early perfection as poſſible.

Some other ſort of forcing Stoves for fruit-trees, are contrived alſo with a low pit for a bark or dung hot-bed, or dung and bark together; beginning firſt to force the trees moderately with only the hot-bed heat; afterwards, gradually apply the fire-heat on nights, encreaſing its ſtrength by degrees.

In all theſe kind of forcing frames, every ſummer after their trees have yielded their produce, the top glaſſes ſhould be removed to admit the free air, ſhowers, &c. to ſtrengthen and harden the ſhoots of the year properly, and ſhould remain open until winter; but for more particulars in reſpect to forcing fruit-trees, ſee the article FORCING FRAME.

*The different ſtructures of Stoves.*

Stoves for the various purpoſes above noted, are formed upon different plans, according to the fancy of the owner or inventor; though there is only one good plan we would recommend for general uſe.

We formerly noticed that Stoves are for the general part ranged lengthways nearly eaſt and weſt, that the glaſſes of the front and roof may be full upon the ſun; this will be found to be the moſt convenient and eligible plan for a common Stove for general uſe, for the purpoſes before mentioned, either for a common bark Stove for pines and other exotics; a dry Stove, or any kind of forcing Stove.

There are however, Stoves of late inventions erected on the following plans.

Some, inſtead of ranging lengthways eaſt and weſt, are ranged directly ſouth and north, having a double ſloped glaſs roof, being ſloped to each ſide like the roof of an houſe, ſloped alſo at the front or ſouth end; both

both ſides and the front end being of glaſs; which kind of Stove, as to dimenſions, is from twelve to ſixteen or twenty feet wide, the length at pleaſure; and from ten to twelve or fourteen feet high in the middle, both ſides nearly head height; is formed by a brick wall all round, raiſed only two or three feet on both ſides, and ſouth end; but raiſed at the north end like the gable-end of a houſe, to correſpond with the above-mentioned double ſloped glaſs roof; and upon the top of the ſide and ſouth walling, is erected the framing for the glaſs-work, which is ſometimes formed with a two feet upright, immediately on the top of the wall, and ſloped to each ſide above; and ſometimes is wholly of a continued ſlope on both ſides, immediately from the wall to the top or ridge: within, it is furniſhed either with one or two bark pits; but if of any conſiderable width, generally with two pits ranging parallel, one under each ſlope of the top glaſs; ſeparated by a two-feet path running along the middle of the Stove; may alſo be continued all round each pit; and with flues ranged along againſt the inſide walls, or round that of the pit; ſometimes alſo, under the pavement of the walk or alley; the whole terminating in an upright funnel or chimney at the north end.

Other kinds of Stoves are formed entirely ſquare, having a ten or twelve foot brick wall behind; that of the front and both ſides, only two or three feet high for the ſupport of the glaſs-work, placed upright nearly the ſame height, and ſloped above on both ſides and front, alſo wholly of glaſs; and is furniſhed within with bark-pit and flues like the others.

And ſome Stoves are made ſemicircular, others entirely circular, formed with a two or three-feet brick wall ſupporting the glaſs framing, which is continued quite round; having the bark-pit alſo circular, and flues carried all round the inſide of the walling, terminating in a chimney on the northern ſide.

However, we have in general obſerved, that the common ſtraight Stoves ranging in a line nearly eaſt and weſt, with the main range of glaſs work in front and top full upon the ſouth, as before hinted, are the moſt commodious, as well as generally prove the moſt ſucceſsful in the end, take ſummer and winter, both for the culture of all kinds of Stove exotics; alſo for forcing any kinds of fruits, flowers, and eſculents; and is the plan we would recommend for general uſe: there are however, hot-houſes or Stoves of this plan of different dimenſions and conſtructions, according to the ſizes of the plants they are deſigned to contain: though the moſt general Stoves for all the aforementioned purpoſes are but of moderate height, not exceeding ten or twelve, or fourteen feet at moſt behind, and five or ſix in front, as in all common pine-apple Stoves; but ſome are built very lofty behind, perhaps twenty or thirty feet height as before obſerved, to admit of the taller exotics being placed towards the back part, and grow up to their full ſtature; but Stoves of a moderate height as above, are beſt adapted to the culture of pines and other moderate-growing plants, as well as for forcing. Very lofty Stoves require both a greater force of heat to warm the encloſed air effectually, and the glaſſes being ſo high, the plants receive leſs benefit of the ſun, and are apt to draw the pines, &c. up too faſt into long ſlender leaves, as they naturally aſpire towards the glaſſes as faſt as poſſible; but in lower Stoves, where the top glaſſes are but a moderate diſtance from the plants, they receive the benefit of the ſun's heat better, and do not draw ſo faſt in ſtature, but become more ſtocky at bottom, and aſſume a more robuſt firm growth, particularly the *ananas* or pine apple, and thereby more capable of producing large fruit: on which conſideration, ſuch Stoves or hot-houſes that are intended principally for the culture of the *ananas*, and other moderate exotics, and for forcing flowers, fruits, &c. ſhould never be built very lofty, but of the moderate height before obſerved, which will be found very eligible dimenſions.

It may be obſerved from the hints already exhibited, that a Stove may be large or ſmall, according to fancy or convenience; for in a ſmall or moderate ſized Stove, a perſon may indulge his fancy with a great number of the more curious ſorts of tender exotics, as well as forward many ſorts of hardy flowers and fruits to early perfection, at a moderate expence for bark and fuel; but where a more general or grander collection is required, either for pleaſure or profit, the dimenſions of the Stove muſt be enlarged proportionably; ſo that a common Stove for either, or all of the afore mentioned purpoſes, may be of any length, from fifteen or twenty, to fifty or an hundred feet, as already hinted, by

by twelve to fourteen or ſixteen feet wide; ten to fourteen feet high behind, by five or ſix in front, wall, and upright glaſs-work together, as before obſerved.—See the particulars below.

*Its General Structure, &c.*

Having however determined on the ſize or dimenſions, as to length and width, &c. of the intended Stove, the following are ſome more full and general ſketches of the dimenſions and conſtruction of the different parts of the building, ſuppoſing it is deſigned as a common bark Stove for general uſe; being furniſhed with a bark-pit and flues, &c. which may alſo ſerve as hints for the erection of any other ſort of Stove.

Proceeding therefore to ſet out the foundations of the walls accordingly of brick-work, allowing alſo due width at bottom to ſupport the flues a foot wide, wholly on the brick foundation; then ſetting off the back or north wall a brick and half or two bricks thick; and the front and end walls nine inches, carrying up the back wall from ten to fourteen feet high; but that of the front and ends only from one or two feet to a yard high, upon which to erect the upright timber framing for the perpendicular glaſſes; previouſly obſerving in carrying up the walls, to allot a proper ſpace for a door-way at one or both ends towards the back part; ſetting out alſo the furnace or fire-place of the flues near the bottom, generally towards one end of the back-wall behind, formed alſo of brick-work, and made to communicate with the lowermoſt flue within; though if a very long Stove, of more than forty feet length, a fire-place at each end will be neceſſary; or if more convenient, may have them in the back part of the end walls; in either caſe, forming them wholly on the outſide of the walls, about fourteen or ſixteen inches wide in the clear, but more in lengthways inward; the inner end terminating in a funnel to communicate internally with the flues as above obſerved; fixing an iron-barred grate at bottom to ſupport the fuel; calculated either for coal, wood, peat, turf, &c. as may be the moſt conveniently obtained; an aſh-hole being underneath, and juſt above it, is the mouth or fluel door to admit the fuel, &c. being about ten or twelve inches ſquare, having an iron frame and door fixed to ſhut with an iron latch as cloſe as poſſible; raiſing the whole furnace ſixteen or eighteen inches in the clear, finiſhing the top archways; carrying up the main walls as you go on.

Thus far obſerved, continue carrying up the walls of the building the thickneſs and height above mentioned; and within-ſide, erect the flues cloſe along the walls a foot-wide, formed with brick-work on edge, the firſt lower flue communicating with the furnace or fire-place without, and raiſed a little above it to promote the draught of heat more freely; continuing it along nearly even with the intended level of the floor of the Stove, cloſe to the wall, only eight or nine inches wide in the clear, as before obſerved, and three bricks on edge deep, returning it three or four times over one another in the back wall, and in the others, one or two as they admit, each return two bricks on edge deep; and may contrive a ſliding iron regulator to draw outward in the beginning of the firſt flues to admit more or leſs heat as may be required; being careful that the brick-work of each flue, as they proceed, is cloſely jointed with the beſt mortar, and well plaiſtered within that no ſmoke can break out, having each return cloſely covered with broad paving tiles; and the uppermoſt or laſt flue to terminate in an upright chimney at one end of the back wall; or if two ſets of flues, a chimney at each end as formerly obſerved, contriving an iron ſlider outward at the end of the laſt flue next the chimney, to confine the heat more or leſs occaſionally as required, either by the heat going off too faſt, or is become too low and weak.

Some in erecting the flues, to make the moſt of the fire-heat with as little fuel as poſſible, form one or two ſpare flues to uſe occaſionally, by means of ſliding iron regulators to admit the heat as may be required for the ſmoke to ſpend itſelf wholly in the flues before it diſcharges itſelf at the chimney; which ſpare flues are ſometimes carried along under the pavement of the floor of the walks; and ſometimes carried up againſt the outſide of the parapet wall of the bark-pit, but detached an inch or two to form a vacancy for the heat to come up without drying the bark too much.

Sometimes alſo, all the flues of ſome Stoves are built entirely detached, perhaps two or three inches from the walls, in order that the fire-heat may diffuſe itſelf from both ſides of the flue.

Should

Should be very careful, that neither the fire-place or flues is carried too near any of the wood-work, leſt it ſhould take fire.

Proceeding however within, to ſet out the cavity for the bark-pit, firſt allowing a ſpace next the flues for a two-foot path or walk all round, and then of the whole middle ſpace is formed the pit for the bark-bed, ſix or eight feet wide, the length in proportion to that of the Stove, and a yard deep; being formed by a ſurrounding wall, and may either be ſunk at bottom a foot or more in the ground, raiſing the reſt above, by means of the raiſed parapet wall; or if there is danger of wet below, it ſhould be raiſed moſtly above the general ſurface; and in either caſe, ſurrounding it wholly in width, length, and depth with a nine-inch wall; though a brick-wide wall is often made to do, eſpecially that which forms the parapet above ground; coping it all round with a timber, plate, or kirb, framed and mortiſed together, which effectually ſecures the brick-work.

Then the bottom of the pit ſhould be levelled and well rammed, and if paved with any courſe materials, it would be an advantage in preſerving the bark.

The path or alley round the pit ſhould alſo be neatly paved with brick or ſtone; this walk being very neceſſary for the convenience of performing the occaſional operations of culture, as well as to admit of walking round to view the plants and gather the produce of ſuch as yield any; though ſometimes to ſave room, the path is only continued along the back and end of the pit, having the pit continued in width quite up to the front wall, which is previouſly raiſed a little in proportion; though it is conſiderably the moſt convenient to have a walk quite round the bark-bed.

Next, in reſpect to the timber framing, and glaſs-work for encloſing the whole, conſiſting wholly of a cloſe-continued range of glaſs ſaſhes all along the front, both ends, and roof, quite to the top of the back wall; each ſaſh being a yard, or three feet ſix inches wide; and for the ſupport of which, framings of timber are erected on the brick-walling conformable to the width and length of the ſaſhes.

So that for the reception of the perpendicular glaſſes in the front and ends, a ſubſtantial timber plate is placed along the top of the front and end walls, upon which is erected upright bars at eligible diſtances, framed to a plate or crown-piece above, of ſufficient height to raiſe the whole front head high, both ends correſponding with the front and back; a plate of timber being alſo framed into the top of the back wall, to receive the ſloping bars from the frame-work in front; proper grooves or channels being formed in the front plates below and above, to receive the perpendicular ſaſhes, ſliding cloſe againſt the outſide of the uprights all the way along the front, or may be contrived for only every other ſaſh to ſlide one beſide the other, as may be convenient, for admitting freſh air, &c.

From the top of the upright framing in front, are carried ſubſtantial croſs bars or bearers ſloping to the top of the back wall, where being alſo a timber-plate, are framed at both ends to the wood-work at due diſtances, to receive and ſupport the ſlope glaſſes of the roof, ranging generally in two or more tiers, ſliding one over the other, of ſufficient length to reach quite from the top of the upright framing in front, to the top of the back wall: the croſs bars being grooved for the ſaſhes to ſlide up and down occaſionally over one another, making the upper end of the top tier of glaſſes, ſhut cloſe up to the plate in the wall behind, running under a proper coping of wood or lead, fixed along above cloſe to the wall, and lapped down of due width to cover, and ſhoot off the wet ſufficiently from the upper termination of the ſaid top ſaſhes; though ſome very wide Stoves, excluſive of the main ſlope ſliding glaſſes, have a ſhorter upper tier of glaſs always fixed in the ſame place; the upper ends cloſe to the back wall ſecured under a coping as above, and the lower ends lapping over the top ends of the upper ſliding tier, and this over that below in the ſame manner, to ſhoot the wet clear over each upper end or termination; likewiſe along the under outer edge of the top plate, or crown-piece in front, may be a ſmall channel to receive the water from the ſlope glaſſes, and convey it to one or both ends without running down upon the upright ſaſhes; being careful that the top of all behind is well framed and ſecured water-tight, and finiſh the top of the back wall with a neat coping the whole length.

In every part, the bars of wood which ſupport the glaſſes ſhould be neatly formed, neither made very broad nor thick to intercept the rays of the ſun; making thoſe however at top ſtrong enough to ſupport the glaſſes without bending under them.

The

The glazing of the ſaſhes ſhould generally be in the imbricated manner, more eſpecially the ſlope ſaſhes of the roof; ſo that the panes of glaſs ſhould be laid in putty, with the ends lapping over each other about half an inch; the vacancies of which are by ſome cloſed up at bottom with putty, others leave each lapping of the panes open, in order both for the air to enter moderately between the ſquares of glaſs, and likewiſe that the rancid vapours ariſing from the fermentation of the bark-bed, &c. within, may be kept in conſtant motion without condenſing much; and that ſuch as condenſe againſt the glaſſes, may diſcharge itſelf at thoſe places without dropping upon the plants; but as to the upright ſaſhes in front, they may be either glazed as above, or the panes laid in lead work; being very careful in both places to have the glazing well performed proof againſt wet.

A door way for general entrance having been formed at one end of the building near the back wall, the door of which may either be wholly of wood, or the upper half may be ſaſhed and glazed to correſpond with the other adjoining glaſs-work of the ends.

Within-ſide of the building, the walls ſhould be plaiſtered, pargetered, and white-waſhed; and all the wood-work, both within and without, painted white in oil colour for its preſervation, and to give the whole a lively appearance, as well as to reflect the rays of light upon the plants on nights, which is ſuppoſed proves of ſome importance in improving their growth.

As to any neceſſary internal erections, there may be one or two ranges of ſhelves for pots of ſmall plants, erected near the top glaſſes towards the back part, ſupported either by brackets ſuſpended from the croſs bars, or by uprights erected on the parapet wall of the bark-pit: a range or two of narrow ſhelves may alſo be placed occaſionally along the front-glaſſes, and both ends; all of which ſhelves will ſerve for holding pots of many ſorts of ſmall plants, that do not require to be plunged in the bark-bed; alſo for pots or boxes of ſtrawberries, cucumbers, flowers, &c. in winter, and early in ſpring for forcing; which being placed as near the glaſſes as poſſible, are generally the moſt proſperous and ſucceſsful in their reſpective crops.

In very wide Stoves, if the croſs bars or bearers of the ſlope or top glaſſes appear to want ſupport, ſome neat uprights either of wood or iron, may be erected upon the bark-bed walling, at convenient diſtances, and high enough to reach the bearers above, and ſupport them effectually in their proper poſition without bending under the glaſſes.

Without-ſide of the Stove over each fire-place, ſhould generally be erected a ſmall covered ſhed with a door to ſhut, for the convenience of attending the fires, and keeping them regularly burning.

Or if the ſituation admitted, a cloſe ſhed might be erected all the way againſt the north ſide of the back wall, which will defend the back of the Stove from the outward air; and if the fire places are behind, it will be convenient for attending and preſerving the fires as aforeſaid; ſerving alſo to ſtow fuel for the general uſe of the Stove, alſo for garden tools, and all garden utenſils when not in uſe, to preſerve them from the weather.

It is likewiſe of importance to have covers for the glaſſes, to draw over occaſionally in ſevere froſts and hail ſtorms, more particularly the top ſaſhes; for which purpoſe ſome uſe wooden, or canvas ſliding ſhutters fitted to the width, &c. of the frames of the ſaſhes ſo as to ſlide on and off preſently; others uſe rollers of painted canvas or tarpaulin rolled up on long poles or rollers, and fixed lengthways all along the top of the Stove juſt above the upper ends of the top ſaſhes; which, by means of lines and pullies, are let down all at once in a minute, and by the ſame means are rolled up again almoſt as expeditiouſly: ſome Stoves however, have neither ſhutters nor rollers for covering; uſing only either large baſs mats or reed mats occaſionally for the ſlope glaſſes, eſpecially in ſevere froſts; though it is alſo proper to defend the upright glaſſes on nights particularly, in very rigorous weather.

Thus far is principally all we have to ſay concerning the general ſtructure of a bark Stove, which may ſerve to convey ſome neceſſary hints, both for the erecting of this, and any other ſort of Stove; and as moſt builders are now well acquainted with the general plan, by giving the intended dimenſions as to ſize, &c. to the different workmen concerned, ſuch as bricklayers, carpenters, and glaziers, they can readily execute it, and finiſh the whole completely, as in other buildings.

The above kind of Stove is calculated not only as a pinery for the culture of the

pine-apple, but for all ſorts of tender exotics of ſimilar quality; ſome requiring to be plunged in the bark-bed, others placed on the top of the flues and ſhelves, and others nearer the glaſſes: the ſame Stove ſerves alſo to force fruits, and flowers, &c. as already hinted.—See STOVE PLANTS.

Remark however, that ſuch Stoves as are intended principally for pine-apples, and for forcing flowers, ſtrawberries, dwarf fruit-trees, and ſmall culinary eſculents, &c. may be only ten feet high behind, and which generally ſucceed better for theſe plants than ſtoves of more lofty dimenſions, for the reaſons already obſerved.

Likewiſe, by raiſing the bark-pit within wholly above the ſurface, elevates the plants plunged therein nearer the glaſſes, and proves advantageous in their growth.

In erecting Stoves, to ſave ſome expence, any garden-wall already built in an eligible expoſure may be made to ſerve as the back wall to the building.

*Nurſery and Succeſſion Stove.*

Beſides the main bark Stove above deſcribed, it is very convenient to have one or two ſmaller, as a nurſery-pit, and a ſucceſſion Stove, particularly where large collections are required, and more eſpecially in the culture of large quantities of pine apples; one ſerving as a nurſery-pit, in which to ſtrike and nurſe the young off-ſpring crowns, and ſuckers of the old pines for propagation; the other as a ſucceſſion-houſe for receiving the year old plants from the nurſery-pit, and forwarding them a year to a proper ſize for fruiting, as ſucceſſion plants, to furniſh the main Stove or fruiting-houſe every autumn, to ſucceed the old plants then done fruiting.

Theſe ſmaller Stove departments prove materially uſeful in the culture of pines, particularly to raiſe and nurſe the young plants, until arrived to a proper age and ſize to produce fruit; then moved into the main Stove or fruiting-houſe, which being thus ſupplied from theſe ſmaller Stoves, with a ſucceſſion of fruiting plants annually, without being crowded or incommoded with the rearing of the ſaid ſucceſſion plants, proves a particular advantage, not only in the culture of the fruiting plants, as they often require a higher degree of heat than the ſucceſſion plants at particular times, in order to forward and improve the growth of fruit properly; but it is alſo making the beſt advantage of this main department, to have the bark-bed always filled with fruiting plants only, producing a full crop of proper ſized pine-apples every year, which could not always be effected with ſuch certainty and perfection without the aid of theſe ſucceſſion Stoves; becauſe the pine-plants in their infant ſtate require ſometimes different management from the fruiting plants, particularly in reſpect to the degree of fire-heat as aboveſaid, which in general ſhould be more moderate than for the fruiting plants, leſt too much heat force them into fruit in their minor growth, when incapable of producing it in any tolerable perfection.

Therefore, theſe ſmaller ſucceſſion Stoves may be erected as appendages to the main houſe, or may be detached at ſome diſtance as may be convenient; though if the ſituation admits, it may be both more convenient and ornamental to join them in a line with the main Stove, one at each end, and nearly of the ſame conſtruction; but may be ſmaller, both in length, width, and height, if thought proper; and ſometimes for cheapneſs, are formed without any upright glaſſes in front, having a wall all round, five or ſix feet; behind gradually ſloping at each end, to three or four in front; and with only ſliding glaſſes at top, more particularly the nurſery Stove, commonly called ſimply the pit, becauſe the whole internal ſpace in length and width, is often allotted intirely as a pit for a bark-bed, frequently without any walk within, or door for entrance; the neceſſary culture being performed by ſliding open the glaſſes at top, and the flues for the fires being formed in the upper part of the back wall: however, it may be more eligible to form the ſucceſſion Stove particularly, nearly like the main one, with erect glaſſes in front, and ſloping ſaſhes at top, with a door for entrance, and an alley or walk next the back wall at leaſt.

Obſerving however, if theſe ſmaller Stoves are joined to the end of the main one, they may be divided from it only by a ſliding glaſs partition for communication with each other, particularly the ſucceſſion and main Stove; but with ſeparate furnaces, and flues to each department; becauſe the young pine plants do not at all times require the ſame degree of fire-heat as the older pines, eſpecially thoſe of proper ſize for fruiting; ſo that

that by having ſeparate fires, the heat can be regulated accordingly.

The nurſery Stove or pit, may be of ſmaller dimenſions in reſpect to width and height, than the ſucceſſion houſe, if thought convenient: and if deſigned wholly as a pit without any path or walk within, ſix or eight feet width may be ſufficient, by five or ſix high in the back wall, and four in front, the whole internal ſpace being filled with tan three feet, deep to form the bark-bed: ſerving chiefly as a nurſery in which to ſtrike and nurſe the annual encreaſe of crowns and ſuckers, of the *ananas* or pine-plants the firſt year; alſo to raiſe many tender plants from ſeeds, cuttings, &c. without incumbering the main Stove; and when they are forwarded to ſuch a ſtate of growth as to require more room, they are removed to the ſucceſſion-houſe.

But the ſucceſſion-houſe may be nearly on the plan of the main Stove, though of ſmaller dimenſions both in width and height; and is intended to receive the year-old pine-plants from the pit or nurſery Stove, in order to plunge them at greater diſtances, ſufficient to give the whole proper ſcope to take their full growth another year, when they will generally be arrived to a proper ſize for fruiting the year following; being previouſly removed in autumn to the main fruiting Stove to ſucceed the old fruiting plants, which generally by October have all yielded their produce, are then removed away, and their place ſupplied by a ſufficient quantity of large plants from the ſucceſſion houſe, being arrived to a proper ſtate of growth to produce fruit next ſummer: and the ſucceſſion-houſe is at the ſame time repleniſhed with the largeſt plants from the nurſery pit, which next autumn will probably be alſo arrived to a proper ſize for removing to the fruiting-houſe to ſucceed the others.

Thus by having the different Stove departments always furniſhed with pine plants of three different ſtages of growth, ſucceeding one another regularly, i. e. the nurſery pit containing the yearly crowns and ſuckers, the ſucceſſion pit the one and two-year plants, and the main Stove the fruiting plants, a conſtant ſucceſſion of fruiting plants is thereby annually obtained; for the ſame individual plants never produce fruit but once; they however, produce a plentiful ſupply of crowns and ſuckers which commence proper plants, attaining a fruiting ſtate in regular ſucceſſion.

However, in many places the ſituation or convenience not admitting but of one common Stove to raiſe and forward the pines and other exotics, in their different ſtages of growth, or at leaſt with probably the aſſiſtance only of a ſmall detached bark-pit, or a bark and dung hot-bed under a large garden frame, to ſtrike and nurſe the yearling crowns and ſuckers of the pines, &c. of each year, until they are about a year old, then moved into the Stove: yet with proper care and ingenuity often produce very good pine apples, as well as raiſe many other curious exotics, and forward flowers to early bloom; alſo early fruit and ſome culinary eſculents.

But having a main Stove with two ſmaller ones adjoining, nearly on the ſame plan as above hinted, we can always with greater certainty, obtain a regular annual ſucceſſion of fruiting pines in perfection.

Remarking, that in all theſe Stoves there may, beſides pine apples which generally occupy the bark-bed, either wholly or in part, be retained numerous other tender curious exotics from the hot parts of the world, that require aid of a hot-houſe in this country; ſome placed in the bark-bed as their nature may require, others upon the top of the flues, top of the bark-pit wall, and upon ſhelves; all of which is generally hinted in the culture of the reſpective ſorts, a liſt of which is exhibited below, being collected into one point of view under the head *Stove Plants*; ſhewing at once all the principal Stove or hot-houſe plants, from the hot parts of Africa, Aſia, and America, now inhabitants of the Engliſh gardens; with hints for their general culture, referring to their proper genera for particulars; likewiſe, a liſt of ſuch hardy flowers, fruits, and culinary eſculents, as may be forwarded to early perfection by the aſſiſtance of theſe departments.

Suppoſing however, the Stove or Stoves are now erected, and ready for the reception of the various plants intended; then obſerving of the bark Stove, that preparations muſt be made early in autumn, to fill the bark-pit thereof with tanner's bark to form the bark hot-bed, for the immediate reception of the tenderer kinds of plants, to be plunged therein, each in its proper pot; this kind of hot-bed being the moſt eligible for all kinds of Stoves or hot-houſes, as by its moderate and durable fermentation, no

material yet known equals it for a hot-bed; it effecting a uniform laſting heat, of a temperature peculiarly adapted to the growth of pine-apples, and many other tender exotics of ſimilar quality. — See BARK BED.

The autumn, about September or early part of October, is the general ſeaſon for filling or repleniſhing the bark-pit with freſh bark or tan, that the bed may ſupport a conſtant lively heat during the winter: however, the work may alſo be performed occaſionally in ſpring, or any time of the year, as occaſion may require.

But for the general management of the Stove or hot-houſe, and the plants thereof, ſee STOVE PLANTS below; in the article of their *General Culture.*

### STOVE PLANTS.

Having exhibited in the foregoing head general hints of the form, dimenſions, and conſtruction of the different ſorts of Stoves, and their reſpective uſes in the culture of plants, we now proceed to a liſt of all the principal Stove plants, or ſuch tender exotics from the hot parts of the world, that require the aid of a Stove to preſerve them in this country; and although they are ſeparately and fully treated of under their reſpective genera, yet by collecting them under one point of view in this place, each under its generical name, with ſhort hints of their nature, by diſtinguiſhing which are ſhrubby, herbaceous, and ſucculent, will, we preſume, aſſiſt the memory in making a collection; referring to their reſpective genera, for the particulars of their reſpective deſcription and culture.

ACANTHUS, Bear's-breech. — Shrubby, holly-leaved *Acanthus.* (*Underſhrubby.*)

ACHRAS, Sapota or Mammee-tree.--Common Sapota.—Mammee Sapota. (*Trees.*)

ACHYRANTHES, Bloody or Red Indian *Achyranthes.*—Woolly-cupped Indian *Achyranthes.*—Lapaceous or Bur-flowered Indian *Achyranthes.*—Prickly-cupped ſhrubby Indian *Achyranthes.*—(*Moſtly herbaceous, and the laſt ſhrubby.*)

ADANSONIA, Æthiopian Sour Gourd. (*Tree.*)

ADENANTHERA, Baſtard Flower Fence. —*Pavonina.*—*Falcataria.* (*Trees.*)

ÆSCHYNOMENE, Baſtard Senſitive plant. —Tree *Æſchynomene.*—Grandiflorous *Æſchynomene.*—Seſban, or Ægyptian *Æſchynomene.* (*Woody.*)

AGAVE, American Aloe.—Viviparous American Aloe.—Stinking American Aloe. (*Succulents.*)

ALETRIS, Guinea Aloe. — Hyacinth-flowered *Aletris.*—Ceylon *Aletris.*—Cape *Aletris.*—Fragrant *Aletris.* (*Succulents.*)

ALOE, African Aloe. Moſt of the ſpecies, except the *Aloe Uvaria*, may be conſidered both as green-houſe and Stove plants; for, although they may all be wintered tolerably well in a green-houſe, yet if placed in the Stove, in winter particularly, they more certainly flower annually in greater perfection. (*Succulent.*)

AMARYLLIS, Lily Daffodil.—Jacobæan Lily.—Mexican Lily.—Zelon Lily. (*Herbaceous and Bulbous.*)

AMOMUM, Ginger.—Common Ginger. Broad-leaved wild Ginger, &c. (*Herbaceous*).

ANACARDIUM, Acajou or Caſhew-nut. (*Tree.*)

ANNONA, Cuſtard-apple.—Netted Cuſtard apple. — Prickly Cuſtard apple. — Scaley Cuſtard apple, or Sweet Sop.—Marſh *Annona*, or Water apple.—Broad-leaved *Annona.* (*Tree and Shrub kinds.*)

APOCYNUM, Dog's-bane.—Shrubby upright Ceylon *Apocynum*, with varieties.—Climbing Dog's-bane, with varieties.—(*Shrubby.*)

ARUM, Wake-Robin, &c. — Ægyptian *Arum* or Colocaſia.—Trilobate Indian *Arum.*—Tree *Arum.*—(*Two firſt herbaceous, the other ſomewhat ligneous.*)

ARUNDO, Reed.—Bamboo Cane, or Indian tree-Reed. (*Ligneous.*)

ASCLEPIAS, Swallow-wort. — American Scarlet *Aſclepias*, &c.—(*Herbaceous but ligneous ſtalked.*)

ASPARAGUS, Sparagraſs.—Tree *aſparagus*, or Dragon-tree. (*Woody.*)

BARLERIA, ſeveral Species. (*Herbaceous and Shrubby.*)

BASELLA, Malabar Nightſhade.—Red Malabar Nightſhade. — White Malabar Nightſhade. (*Herbaceous.*)

BAUHINIA, Mountain Ebony.—Prickly *Bauhinia.*—Tomentoſe *Bauhinia.* (*Shrubby.*

BIGNONIA, Trumpet-flower. — Several ſpecies. (*Chiefly Woody.*)

BIXA, Dying Metella, &c. (*Shrubby.*)

BOCCONIA, Tree-celandine. (*Shrubby.*)

BOMBAX, Silk Cotton-tree. — Thorny *Bombax*, or Ceiba.—Pentandrous, ſmooth *Bom-*

*Bombax.* — Heptaphyllous ſmooth *Bombax.* (*Trees.*)

BONTIA, Barbadoes Wild Olive. (*Shrubby.*)

BROMELIA, *Ananas*, Pine-apple.—Common *Ananas* or Pine-apple. — Wild Pine-apple or Pinguin. — *Karatas*, or Acaulous wild Pine-apple. — Pyramidal *Bromelia.*— Lingulated *Bromelia.* (*Herbaceous.*)

BRUNSFELSIA, *Brunsfelſia.* (*Shrubby.*)

BUDDLEJA, American *Buddleja.* — Occidental *Buddleja.* (*Shrubby.*)

CACTUS, Melon-thiſtle, Torch-thiſtle, &c. — Greater Hedge-hog Melon-thiſtle, with Varieties.— Mammillary, or Smaller Melon-thiſtle. — Torch thiſtle, ſeveral upright ſorts. — Creeping or trailing Torch-thiſtle. — Climbling Torch-thiſtle. — *Ficus Indica*, or Indian Fig.—Greater Indian Fig. —Cochineal Indian Fig. — Indian Fig of Curaſſoa.—Sword-leaved *Opuntia.* — *Periſkia*, or American Gooſeberry. (*All of the Succulent tribe.*)

CAPSICUM, Guinea-Pepper. — Shrubby *Capſicum*, with many varieties. (*Shrubby.*)

CARICA, Papaw or Pepo-tree. — Common Indian Papaw-tree. — Poſopoſa, or Branching Surinam Papaw-tree. (*Tree like.*)

CASSIA, Wild Sena.—Purging-tree *Caſſia.*—Biflorous ſhrub *Caſſia.* (*Tree and Shrub kinds.*)

CATESBEA, Lily-thorn. (*Shrubby.*)

CEANOTHUS, New Jerſey Tea.—Aſiatic *Ceanothus.* (*Shrubby.*)

CESTRUM, Baſtard Jaſmine, or Jaſminoide.—Nocturnal *Ceſtrum.*— Diurnal *Ceſtrum.* (*Shrubby.*)

CHAMÆROPS, Dwarf Palm or *Palmetto.* (*Frondoſe.*)

CITHAREXYLON, Fiddle Wood. (*Shrubby.*)

CLUTIA, *Elutaria*, or Indian *Clutia.* (*Shrubby.*)

COCOS, Cocoa-nut-tree. (*Frondoſe Tree-kind.*)

COFFEA, Coffee-tree. (*Shrub-like.*)

COTYLEDON, Navel-wort.—Cut or jagged-leaved *Cotyledon.* (*Succulent.*)

CRESCENTIA, Calabaſh-tree. (*Tree kind.*)

CRINUM, Aſphodel-lily.—American Aſphodel-lily.—Aſiatic Aſphodel-lily. (*Bulbous herbaceous plants.*)

ELÆAGNUS, Wild Olive, or *Oleaſter.*— Thorny *Elæagnus.* (*Woody.*)

ERYTHRINA, Coral-tree.—*Corallodendron*, or Smooth Coral-tree.—Spinous Coral-tree.—Herbaceous *Erythrina.* (*Shrubby and Herbaceous.*)

EUPHORBIA, Burning Thorny Plant.— *Euphorbia* of the Ancients.—Canary *Euphorbia.* —Oleander-leaved *Euphorbia.* — Meduſa's-Head *Euphorbia.*—Tithymaloide *Euphorbia*, or Baſtard Spurge. (*All Succulent.*)

FICUS, Fig tree.—Sacred Fig, or Indian God-tree.—Sycamore Fig-tree.—Bengal Fig-tree.—Indian long-leaved Fig-tree.—Dwarf Indian Fig-tree. (*Tree kinds.*)

GARDENIA, Cape Jaſmine. (*Shrubby.*)

GLORIOSA, Superb Lily. (*Herbaceous*).

GOSSYPIUM, Cotton-plant.—Conſiſts of herbaceous and ſhrubby ſpecies. See GOSSYPIUM.

GREWIA, Oriental *Grewia.* (*Shrubby.*)

HÆMANTHUS, Blood-flower. — Scarlet *Hæmanthus.*—Reddiſh *Hæmanthus.* —Carinated *Hæmanthus.*—Ciliated *Hæmanthus.* (*Herbaceous bulbs.*)

HÆMATOXYLUM, Blood-wood, or Log-wood. (*Tree-like.*)

HERNANDIA, Jack-in-a-box-tree. — Sonorous *Hernandia.* — Oriental *Hernandia.* (*Trees.*)

HIBISCUS, Syrian Mallow. — Mutable-flowered *Hibiſcus*, or China Roſe.—*Roſa Sinenſis*, or Roſe of China.—Viſcous Mallow, or Scarlet *Hibiſcus.* (*Shrubby.*)

HURA, Sand Box-tree. (*Woody.*)

IATROPHA, Caſſada, or Caſſava Plant.— Moſt of the ſpecies are Stove-plants. (*Woody and herbaceous.*)

JUSTICIA, Malabar-nut. —Hyſſop-leaved Juſticia, &c. (*Woody.*)

KÆMPFERIA, *Galangale.*—Both the ſpecies (*Herbaceous.*)

LANTANA, American Viburnum. —Trifoliate *Lantana.*—Involucrum-headed *Lantana.*—*Camara*, or leafleſs-headed *Lantana.*— Prickly *Lantana.* (*Shrubby.*)

LOBELIA, Cardinal flower. — Plumier's *Lobelia.*—Surinam *Lobelia.*—Pine-leaved *Lobelia.* (*Shrubby.*)

MALPIGHIA, Barbadoes Cherry. — All the ſpecies. (*Woody.*)

MAMMEA, Mammee-tree. — American Mammee tree. — Aſiatic Mammee Tree. (*Trees.*)

MARANTA, Indian Arrow-root. — Arundinaceous *Maranta.* — Galanga, or Indian Arrow-root. (*Herbaceous.*)

MARTYNIA.—Perennial *Martynia.* (*Herbaceous.*)

MELIA, Bead-tree.—Evergreen Bead-tree of Ceylon.—*Azadirachta*, or Indian Bead-tree. (*Tree kinds.*)

MESEMBRYANTHEMUM, (*Ficoides*) Fig Marigold.—Diamond *Ficoides*, or Ice-plant. (*Herbaceous and Succulent.*)

MIMOSA, Senſitive plant.—All the ſpecies. (*Shrubby and Herbaceous.*)

MUSA, Plantain-tree. — All the three ſpecies. (*Of a Tree-like growth, but Herbaceous nature.*)

MYRTUS, Myrtle-tree.—Pimento or All-ſpice-tree. — Dioecious Myrtle. — Braſilian Myrtle, &c.—(*Tree and Shrub kinds.*)

NERIUM, Oleander. — Double-flowered. —Striped-leaved, &c. (*Shrubby.*)

NYCTANTHES, Arabian Jaſmine.—Sambac, or Common Arabian Jaſmine.—Undulate-leaved *Nyctanthes*, or Malabar Jaſmine. —*Arbor Triſtis*, or Sorrowful-tree.—Hairy Sorrowful-tree. (*Shrubby.*)

PANCRATIUM, (*Pancratium* lily) Sea Daffodil. — Ceylon uniflorous *Pancratium.* — Mexican biflorous *Pancratium.* — Caribbæan multiflorous *Pancratium*—Carolina multiflorous *Pancratium.* — Amboyna broad-leaved *Pancratium.* (*Bulbous Herbaceous perennials.*)

PASSIFLORA, Paſſion-flower. — Sawed-leaved Paſſion-flower.—Laurus-leaved Paſſion-flower.—Veſpertilious, or Bat's wing Paſſion-flower.—Red Paſſion flower.—Maliformous, or apple-fruited Paſſion-flower.—Silky Paſſion-flower.—Multiflorous Paſſion-flower. — Quadrangular Paſſion-flower. — Suberoſous, or Cork-barked Paſſion-flower. (*Woody, and Herbaceous climbers.*)

PERIPLOCA, Virginia Silk, &c.—Indian *Periploca.* (*Woody.*)

PHOENIX, Great Palm, or Date-tree. (*Ligneous.*)

PHYSALIS, Winter-cherry.— *Arboreſcent*, or Tree *Phyſalis.*—Winter-cherry of *Curaſſao.* (*Woody.*)

PLUMBAGO, Lead-wort.—Ceylon *Plumbago.*—Roſe *Plumbago.* (*Ligneous or Underſhrubby.*)

PLUMERIA, Red Jaſmine.—Red *Plumeria.*—White *Plumeria.* — Obtuſe *Plumeria.* (*Woody Succulents.*)

POINCIANA, Barbadoes Flower-fence, &c. —Fair *Poinciana*, or Double-ſpined Barbadoes Flower-fence. — Bijugated Single-ſpined *Poinciana.* — Spineleſs *Poinciana.*— (*Shrubby.*)

POLYANTHES, Tuberoſe, or Indian Tuberous Hyacinth. (*Herbaceous.*)

PTELEA, Shrub trefoil.—Viſcous Indian *Ptelea.* (*Shrubby.*)

RHAMNUS, Buckthorn. — *Spina Chriſta*, or Æthiopian Jujube.—*Oenoplia*, or Ceylon Jujube. (*Shrubby.*)

RHUS, Sumach.—Cobbe, or Ceylon Sumach. (*Shrubly.*)

RIVINIA, Dwarf Tetrandrous *Rivinia.*—Climbing Octandrous *Rivinia.* (*Ligneous.*)

ROBINIA, Falſe Acacia.—Violet American *Robinia.*—Smooth Indian *Robinia.* (*Tree and Shrub kinds.*)

SACCHARUM, Sugar-cane. — Common Sugar-cane. — Spiked Sugar-cane. (*Herbaceous, of the Arundinaceous tribe.*)

SCHINUS, Indian Maſtic-tree. — Molle-tree of Cluſius, or Peruvian Maſtic-tree.—Areira, or Braſilian Maſtic-tree. (*Woody.*)

SIDEROXYLON, Iron-wood. — Inormous, or Smooth Æthiopean *Sideroxylon.*—Spinous, Malabar *Sideroxylon.* (*Shrubby.*)

SOLANUM, Nightſhade.—Guinea Nightſhade.—Fiery-thorned Nightſhade. —Bahama Nightſhade.—Trilobate Nightſhade, &c. (*Shrubby.*)

STAPELIA, Variegated *Stapelia.* — Hairy *Stapelia.* (*Succulent, and ligneous.*)

TAMARINDUS, Tamarind-tree. (*Tree.*)

THEOBROMA, Chocolate nut-tree.—*Cocao*, or Chocolate-nut-tree.—*Guazuma*, or Baſtard Cedar of Jamaica. (*Shrub and Tree kind.*)

TOLUIFERA, Balſam of Tolu-tree.

TOURNEFORTIA, Shrubby *Tournefortia.* —Volubilate, or Twining *Tournefortia.*—Fœtid, or Stinking *Tournefortia.* — Hairy *Tournefortia.* — Serrated *Tournefortia.*—Cymoſe *Tournefortia.* (*Shrubby.*)

TRIUMFETTA, *Lappula*, or *Triumfetta.* (*Ligneous.*)

TURNERIA, Elm-leaved. (*Ligneous.*)

VINCA, Periwinkle. — Roſe Periwinkle of Madagaſcar. (*Shrubby.*)

VITIS, Vine.—Indian wild Vine.—Trifoliate Indian Vine. (*Shrubby.*)

VOLKAMERIA, Prickly *Volkameria.*—Unarmed or Smooth *Volkameria.* (*Shrubby, and Underſhrubby.*)

URENA, Angular-leaved *Urena* —Sinuated *Urena.*—Procumbent *Urena.* (*Woody.*)

WALTHERIA, American *Waltheria.* Indian *Waltheria.*—Narrow-leaved *Waltheria.* (*Ligneous.*)

WINTERANIA, (*Shrubby.*)

XIMENIA, American Prickly *Ximenia.* —Unarmed Jamaica *Ximenia.* (*Trees.*)

ZAMIA,

ZAMIA, Dwarf American Palm. *(Frondoſe.)*

Of the above liſt of Stove plants, a few of the ſorts are alſo inſerted in the green-houſe liſt; becauſe, in default of a Stove, they may be preſerved tolerably well in a good green-houſe, though probably brought to greater perfection in a Stove, as is generally noticed in the culture of the reſpective ſorts, each in its proper genus.

*General Management.*

As to the general management of the bark Stove and culture of the plants; the pit of the Stove muſt always be filled with bark to produce a continual heat, making fires only in winter, &c. and all the plants muſt be kept conſtantly in pots, in order to move to different ſituations in the houſe occaſionally, ſome in the bark-bed, others on the ſhelves, top of the flues, &c.

But to prepare the Stove for the reception of the plants, the bark-bed muſt be formed by filling the pit with new tanner's bark early in autumn, or any time elſe when the moſt convenient to obtain the plants.

The bark for this purpoſe is procured from the tan-yards, after having been uſed in tanning, and caſt out of the tan-pits; chuſing that which is freſh, not having lain long to exhauſt itſelf, or become black and earthy; but the freſher it is from the tan-pits the better, preferring the larger or middling ſort to the ſmall-cut bark, which ſoon becomes earthy and declines its fermentation; but the larger ſort will retain its heat ſeveral months: having however obtained the proper quantity, it is proper, previous to committing it to the pit, to ſpread it abroad or diſpoſe it in ſmall heaps or ridges, two or three days in dry weather, to drain and dry moderately; or if copiouſly wet, may afterwards be formed into an heap to drain off the redundant moiſture more effectually, and promote its fermentation; and in a few days, or perhaps a week or more, it will be in good preparation for uſe; then fill it into the bark-pit, being careful as it is thrown in, to ſhake it up well together with the bark fork equally in every part, not beating or treading it down, raiſing the whole half a foot above the top of the pit to allow for ſettling, ſuffering it to ſettle gradually of itſelf; and thus the fermentation will come on regularly perhaps in a week or ten days; though may probably be a fortnight or more, before it becomes of a due temperature for the reception of the plants: having ſome long ſticks thruſt into the bed, drawing them up daily, and feel them with the hand, you will more eaſily diſcover the progreſs of the fermentation, and proper degree of heat; obſerving, if the heat ſhould prove violent, to defer plunging the plants till it is become of a more moderate temperature.

When therefore the bark-bed is ready, prepare to plunge the plants, ſuch as pines and other exotics that require the aid of the bark-bed; and the other leſs tender kinds, to be placed in different parts of the houſe as their nature may require; all the ſorts being previouſly planted in pots.

In potting the different kinds, allot proper ſized pots according to the ſize and nature of the plants, not too large at firſt, for as they advance in growth they may be ſhifted into others, a ſize larger, &c.

Being careful alſo, to pot them in proper earth adapted to the nature of the reſpective ſorts; though moſt of the ſhrubby or woody kinds, and the common herbaceous tribe, ſucceed in any common rich light earth; but all the ſucculent plants ſhould be planted in a dry, ſandy, or rubbiſhy ſoil, on account of their humid quality: however, as to the different ſoils requiſite for any particular ſort, it is exhibited in their culture under their reſpective heads.

In proceeding to plunge the pines and other ſorts intended in the bark-bed, it is proper to have a broad plank or board to lay acroſs the bed, on which to ſtand or kneel without treading the bark hard; likewiſe a hand-fork for opening the apertures more expeditiouſly to plunge the pots, which may be plunged to their rims, if the fermentation is not too violent; arranging the plants regularly in reſpect to their different gradation of height, the talleſt behind, gradually down to the loweſt in front; and if diſpoſed in the quincunx way, they will receive the advantage of more room, and benefit of the air and rays of the ſun more equally, plunging the whole down to the rims of the pots, as above obſerved; and at the ſame time, let all the other leſs tender kinds, be diſpoſed in different parts of the houſe, as their temperature may require: many of the woody and herbaceous kinds ſucceed well enough any where within the Stove; but moſt of the ſucculent tribe ſucceed beſt in the drieſt part near the flues, diſtant from moiſture, eſpecially in winter,

being

being placed either on the top of the flues, or on ſhelves ranged above them; though almoſt any ſorts of Stove plants when intended to forward them faſter in growth, or into bloom, may be plunged in the bark-bed occaſionally; however, as to the *ananas* or pine-apple, although they will grow in any part within the Stove out of the bark-bed, yet never ſo proſperouſly, nor produce any but ſmall trifling fruit, therefore require to be continued always plunged in the bark-bed the year round; ſeveral other of the more tender curious exotics, not ſucculents, are alſo the moſt proſperous if plunged in the bark-bed, where there is room enough without incommoding the pine-plants.

Obſerve, if after the plants are plunged in the bark-bed, the bark ſhould happen to heat violently, it is proper to draw up the pots half way, or far enough to ſave the roots of the plants from being by vehemence of the heat damaged, replunging them again down to their rims when the heat becomes more moderate.

Moſt of theſe kinds of Stove plants require to be continued almoſt conſtantly in the Stove the year round; though, if the Stove is much crowded, ſome of the leſs tender kinds will bear to be almoſt fully expoſed to the open air, ſix weeks or two months in the heat of ſummer, in warm dry ſeaſons; at leaſt, may remove ſome into the green-houſe or under frames, &c. towards the latter end of June, or beginning of July, to thin the Stove; the green-houſe being then vacant, and in which theſe hardier Stove plants may enjoy the free air more copiouſly to promote ſtrength, by opening all the windows daily, yet be ſheltered on nights and bad weather; which would change the colour of their leaves diſagreeably; removing them however, into the Stove again early in September, or as ſoon as the nights prove cold.

The Stove muſt always be kept nearly to a certain regular temperature of heat as marked on the botanical thermometer *(ananas)*; obſerving, that in ſummer from April or May until October, the bark-bed heat alone, aided by the heat of the ſun through the glaſſes, will ſufficiently warm the internal air: but from October or beginning of November, to April or May aforeſaid, the additional aſſiſtance of fire-heat is requiſite to expel the cold within, and ſupport a due warmth in the internal air, nearly equal to that in ſummer; by making fires every evening and morning in the furnace of the flues, alſo occaſionally on days in very cold damp weather, and rigorous froſts without ſun.

But, as a guide to regulate the degree of heat requiſite for Stoves, eſpecially in winter, a botanical thermometer ſhould be placed in a convenient ſituation within, not too near the fire-place or flues, but hung up towards the center of the houſe with the back to the ſun, ſo as the mercury or liquid ſpirit in the glaſs globe and tube may be affected, only by the warmth of the air internally, thereby diſcovering the real degree of heat more effectually, which ſhould always be ſo regulated, as not to exceed five or ten degrees over or under the mark *ananas*, which as we noticed before, is the ſtandard generally to be obſerved in regulating the temperature of Stove heat at all ſeaſons.—See THERMOMETER.

Freſh air muſt be admitted into the Stove occaſionally at all ſeaſons, for the benefit of the plants in general, by ſliding ſome of the front or top glaſſes open in ſunny days, more or leſs, according to the ſeaſon and temperature of the outward air, &c. obſerving, however, that in winter and early ſpring, air muſt be admitted but ſparingly and cautiouſly, only at favourable opportunities in fine calm ſunny days, opening only ſome of the glaſſes a little way in the heat of the day, for two, three, or four hours, as the weather permits, ſhutting all cloſe timeouſly in the afternoon or ſooner, if the air changes cloudy or very cold; but in ſummer admit air more freely every warm day, and in hot ſun-ſhine weather eſpecially, ſhould ſlide every other light open pretty conſiderably, and in the greateſt heat of ſummer, may open ſome of the glaſſes almoſt at large towards noon: being however careful at all ſeaſons, to proportion the admiſſion of free airy, judiciouſly, both as to time and quantity; not opening too ſoon in the day, before the ſun has ſome power of heat; that in winter or during the cold ſeaſon, may give air in calm ſunny days from about ten or eleven of the forenoon, till two or thereabout, or not ſo long if the weather changes; and in ſummer, from eight, nine, or ten in the morning, till three or four in the afternoon, or an hour or more earlier and later in very hot weather; remarking in general, that in giving air at all times of the year, to ſlide the lights open only a little at firſt in

in the morning, and as the heat increaſes, towards noon admit a larger portion of air, according to the ſeaſon; but when the ſun or heat of the day is on the decline, ſhut the glaſſes cloſer in proportion, having alſo particular attention to ſhut all quite cloſe in due time, at the approach of the weather proving unfavourable, more eſpecially in winter, &c. and always in due time in the afternoon, before the warmth of the encloſed air falls too much below its due ſtandard; generally obſerving the degree of heat on the thermometer.

Watering the plants in Stoves is alſo a material branch of culture to be performed, according as the different ſorts require, which muſt always be applied more ſeldom and ſparing in winter than in ſummer; remarking, the woody or ſhrubby plants, and moſt of the herbaceous tribe that are not ſucculent, require water frequently; the woody kinds require it the moſt frequent, the herbaceous plants in a middling degree, and the ſucculents the leaſt of all; ſo that the woody and common herbaceous plants, in this department, require watering, ſome perhaps two or three times a week in ſummer; and in winter, probably not above once a week; but you will regulate this accordingly, as you obſerve the plants ſtand in need: and always apply the neceſſary waterings with due moderation, juſt to preſerve the earth in the pots moderately moiſt, but never too wet; giving alſo at times occaſional waterings all over the heads of the plants, in ſummer particularly, though but very ſparingly in winter, eſpecially to the *ananas*, *aloes*, and other exotics of ſimilar growth; as the water would lodge long between the leaves of theſe ſorts, at this ſeaſon: nor muſt it be practiſed to the pines when in flower. But as to the ſucculent tribe, they being naturally very replete with moiſture, need but very little water at any ſeaſon, more particularly in winter; except ſuch as ſtand ſo near the hot flues that the ſoil in the pots dry very faſt, when a light watering now and then will be eligible, alſo in hot ſunny weather in ſummer.

But in watering ſuch of the woody plants, &c. as are apt to contract filth or inſects, it is proper to water alſo all over their branches and leaves occaſionally, at almoſt any ſeaſon when the caſe requires it.

For the purpoſe of watering theſe plants, in winter particularly, a ciſtern or tub placed in one corner of the Stove, would be convenient to contain water ſome hours previous to the uſing it, juſt to take off the chilling cold.

Likewiſe, for the convenience of watering the pines and other plants plunged in the bark-bed, or where they are crowded cloſe, a tin pipe made with two or three joints or pieces, to join into one another to lengthen or ſhorten at pleaſure; one of the pieces having a funnel fixed at one end, ſo that by pouring the water into the funnel, may conduct it to any pot in the bark-bed, &c. without wetting the hearts of the plants, which in the pines is to be avoided as much as poſſible in winter, and when they are beginning to ſhew fruit.

The bark-bed will ſupport a good growing heat three or four months, and if in that time the heat is much decreaſed, the pots being taken up, and the bark then forked over to the bottom, breaking all lumps, and mixing the parts well together, immediately replunging the pots, the bed will renew its fermentation, and continue in a proper temperature of heat ſix weeks, or two months longer, or more. Then about March or April, its ſtrength being conſiderably exhauſted, and probably have become earthy towards the top and ſides, then prepare to revive its declining heat by the addition of about one third at leaſt, of freſh tan, previouſly removing the pots, then clearing out all the moſt earthy or crumbly old tan at top, and outſides of the bed; then in its ſtead introduce as much new, as will fill up the pit again, and then fork up the whole, new and old together, plunging the pots again as before; and thus the new bark will promote a freſh fermentation, and renew the heat ſo effectually, as to continue it in good order till autumn; at which time, about September or October, as the bark will be in a manner quite exhauſted, both in ſubſtance and its fermenting property, it ſhould be almoſt entirely renewed with a freſh quantity of new tan; but previous to this augmentation, obſerving if the old tan is not entirely waſted to a ſmall earthy ſubſtance, it may be ſkreened, to ſeparate the ſmall exhauſted materials from the larger unexhauſted bark, clearing out all the ſmall ſtuff that paſſes through the ſkreen, the larger remaining in the pit; then add to this, as much freſh bark as will fill up the pit to the top, forking up the whole, new and old together; though if the whole of

the old tan is become very ſmall and earthy, it ſhould be cleared entirely out, and fill the pit wholly of new bark.

But for more particulars reſpecting theſe bark hot-beds, ſee BARK BEDS.

And as to fire-heat for the Stove, this is required only in winter and ſpring, as before obſerved, to expel the cold and damps, and ſupport the heat of the internal air in a due temperature, as the bark-bed heat alone is not ſufficient in winter; generally beginning to make the fires moderately in the end of October, or beginning of November, when cold or dark foggy weather commences, making gentle fires every night; and as the cold increaſes towards Chriſtmas, encreaſe the ſtrength of the fires in moderation; and in very ſevere, or cold damp foggy weather, continue the fires alſo occaſionally on days, being always cautious never to make them too violent, but ſo as to produce nearly a uniform heat in the internal air, as marked on the thermometer; and thus continue the aid of fire-heat till about April or May, according to the temperature of the weather.

The firing for the Stoves, may be either coal, wood, peat, or turf; but where coal can be eaſily obtained at a moderate expence, I ſhould prefer it for general uſe, as being the moſt ſteady, regular, and durable fuel, requiring leſs attendance than any other; but in default of this, wood, peat, or turf is uſed in many places.

In winter, when the froſt happens to prove very ſevere, it is adviſeable to cover the glaſſes of the Stove every night, at top particularly, to protect the plants; either with ſhutters, canvas, or tarpaulin rollers, or large garden-mats, &c. as formerly mentioned, which covering may alſo be uſed in the day-time occaſionally, if the froſt continues extremely rigorous and no ſun appears; but by no means continue the day-covering to darken the plants longer than it ſhall appear abſolutely neceſſary.

And in the heat of ſummer in very hot ſunny days, it may ſometimes be proper to afford the plants a moderate ſhade of mats, over the top glaſſes for an hour or two, during the violent heat, leſt the ſun ſhining vehemently through the glaſſes ſhould ſcorch the leaves or burn them in holes, and prove detrimental to ſmall tender plants.

Shifting the plants into larger pots, and freſh earth occaſionally, muſt alſo be duly attended to.

Accordingly therefore, as the different plants in the Stove encreaſe in growth, and require larger pots, they ſhould be ſhifted into others a ſize larger; which may be requiſite to ſome plants annually, ſuch as the pine-apples and other free-growing exotics; others once in two years, and ſome not ſo often; ſuch as ſome of the ſmaller ſlow-growing ſucculents, &c. though moſt ſorts of plants in this department will either require ſhifting, or freſh earthing more or leſs every year or two; either in the ſame or larger pots, as their growth may require.

The general ſeaſon for performing theſe works of ſhifting or freſh-earthing, is either in the ſpring about April or May, or early part of autumn, as Auguſt or the beginning of September will be time enough for the plants to ſtrike freſh root in the newly added earth before winter; though if any particular plant ſtand in great need of ſhifting, or is in a bad ſtate of growth, the ſhifting may be performed almoſt at any ſeaſon of the year, chuſing however principally the ſpring or autumn as abovementioned for any general ſhifting.

In performing the ſhifting, generally preſerve the ball of earth entire about the roots, unleſs the roots are ſuppoſed to be in a decayed ſtate, when all the old earth may be cleared away, and the roots trimmed as occaſion require; but thoſe removed with the entire ball, ſhould only have any very mouldy and matted roots round the ſides and bottom of the ball trimmed off, together with a little of the old earth, if it can be done without diſturbing the ball; then having the new pots and freſh compoſt ready, placing pieces of tyle or oyſter-ſhell over the holes in the pots, and ſome freſh earth at bottom, ſet in the plant and fill up round the ball or roots with more new mould almoſt to the top of the pot, giving directly a moderate watering to ſettle the earth cloſe; and thus proceed plant and plant till finiſhed, returning each to its proper place again; plunging all the pines in the bark-bed, and alſo as many of the other plants as room will admit, which will forward their ſtriking or rooting more quickly in the new earth: after which the leſs tender kinds may be removed to the ſhelves, &c. in any part of the Stove.

Such plants however, as do not require ſhifting annually, may be freſh earthed at top, &c. in ſpring; previouſly removing ſome of the old earth from the top, and a little way

way down round the ſides of the pot, then repleniſhing with an equal portion of freſh mould, will prove very beneficial culture, finiſhing each with a very moderate watering to ſettle the earth.

It is of importance in the Stove culture to keep all the plants clear from decayed leaves, by removing all ſuch as ſoon as they appear, as it both tends to preſerve the beauty and health of the plants.

Likewiſe, it is of conſequence to keep all plants confined in Stoves clean from duſt and filth, which moſt ſorts are apt to contract by ſuch confinement, often to their great prejudice if not timely cleaned; this may ſometimes be effected in ſome ſorts, by now and then watering the plants all over their heads, which will waſh off any looſe duſt, and give the plants a lively healthful appearance; though, where any is very foul, is adviſeable to waſh the leaves thereof, leaf and leaf, with a ſponge and warm water, eſpecially the larger or broad-leaved ſorts that admit of it, alſo the ſtems and branches whereſoever any filth is contracted; but as to the pines in particular, and the *aloe* kinds, and others of the like growth, ſhould not be watered all over in winter, becauſe in that ſeaſon the water is apt to lodge between their leaves a long time, ſo ſhould only waſh their leaves when foul with a wet ſponge tied on the end of a ſmall ſtick, for cleanlineſs contributes exceedingly to the proſperity of the plants; duſt or any filth being ſuffered to encreaſe conſiderably, is apt to clog and obſtruct the fine neceſſary organs of perſpiration, as well as the abſorbent veſſels deſtined to imbibe the humidity of the air; thereby cauſe a ſtagnation of the ſap, and the plants aſſume a ſickly ſtate, and often become the prey of inſects: it is therefore effectually neceſſary to keep all theſe plants as clean as poſſible, as it certainly conduces very conſiderably to their health and beauty.

Inſects often infeſt the plants in Stoves, and ſometimes prove very deſtructive to ſome ſorts, particularly the pine-apple; appearing firſt like mildew, and ſoon after aſſume the appearance of lice. The cauſes of them are variouſly aſſigned; ſome impute it to uncleanlineſs and bad ſtate of health, others to the dry air of the Stove, unavoidably occaſioned by the fire-heat, and others to the bad management of the plants; though it is certain we ſhall often alſo ſee plants that are ſeemingly healthful and well managed, ſuddenly attacked with inſects; and when this happens, the plants ſoon aſſume a ſickly appearance. As however this diſaſter of inſects is aſcribed to ſeveral cauſes, ſo are ſeveral methods propoſed for the abolition of them; ſome waſh them with the infuſion of tobacco, &c. i. e. water impregnated with tobacco ſtalks, tobacco duſt, and ſoot, &c. and with this waſh the leaves, ſtalks, and branches; and ſometimes alſo, ſtrew tobacco duſt over the leaves and other parts: others try the effect of fumigation of tobacco, by means of a pair of bellows, furniſhed with a large tin or braſs tube to ſcrew on the noſſel of the bellows at pleaſure, the extreme end terminating in a long pipe, and the tube being filled with tobacco ſet on fire, then by blowing the bellows it produces a ſtrong ſtream of ſmoke from the pipe, which being directed to the parts of the plants infeſted with the vermin, it generally extirpates them pretty effectually, without injuring the plants: various remedies are occaſionally advertiſed in the newſpapers for ſale, both of a powder and liquid kind, to deſtroy theſe Stove inſects; alſo receipts to be ſold for preparing ſuch a compoſition, pretending to be of infallible efficacy.

However, previous to the application of the above remedies to deſtroy the inſects, it is alſo of importance to keep the plants always clean from filth; the bark-bed always of a lively growing warmth, to continue the plants in a free growth, and keep the earth in the pots of a middling degree of moiſtneſs by due moderate waterings, ſprinkling the tops alſo now and then as before obſerved; thoſe however of the pines only in ſummer, for the reaſons before given; applying alſo if needful, any of the other remedies that may be thought the moſt efficacious. Likewiſe, if after all, any particular plant remains ſeverely attacked, and rendered of a very ſickly, weak ſtate by the vermin, it is adviſeable to ſhift it into a new pot and ſome freſh earth, and plunge it into the warmeſt part of the bark-bed, or other good hot-bed under glaſſes, ſtill uſing alſo the other means; and thus the plant will likely aſſume a free growth, and recover its proper health and vigour.

Thus far is principally the general management of a Stove, and culture of the plants at large; and as to the method of propagating the various ſorts, and of any peculiar culture and other occurrences of particular ſpecies, &c. we refer to their reſpective genera for explanations on thoſe heads.

*A liſt of hardy plants, &c. for forcing in Stoves, and general culture.*

As we have already obſerved, that beſides the tender exotics which require the conſtant aid of the Stove, many hardy plants, both herbaceous, ſhrub, and tree kinds, may be occaſionally introduced into the Stove, in order for forcing to early perfection when required.

For inſtance, various hardy herbaceous flower-plants may be forwarded into bloom in the Stove, long before their natural ſeaſon in the open ground; ſuch as early dwarf tulips, hyacinths, polyanthus;—narciſſus, jonquils, and many other narciſſus kinds; anemones, ranunculus, and almoſt any other of the more curious ſorts of bulbous and tuberous flower-plants that may be required early in bloom; previouſly planting the roots in pots in autumn, and place them in a garden frame, &c. to be ſheltered only from froſt till the time arrives for placing them in the Stove, which may be almoſt any time in winter, though if not till towards Chriſtmas or after, we may expect a ſtronger and finer bloom; placing them upon ſhelves towards the glaſſes: or if required to have ſome of them flower as early as poſſible, may plunge the pots into the bark-bed; ſupplying all the ſorts duly with water, eſpecially after they begin to ſhoot; and they will here grow freely without trouble, and produce their flowers both early, and in very good perfection.

Likewiſe pots of pinks, carnations, ſweet-williams, wall-flowers, ſtock-gilliflowers, &c. being placed in the Stove in January, February, or any of the early ſpring months, may be forwarded conſiderably in flowering; alſo many other fibrous-rooted perennials, that may be required early in flower. Likewiſe in the Stove may be raiſed many of the curious annual flowers early from ſeed, and forwarded to an early bloom.

Of eſculent herbaceous plants, may raiſe early kidney beans and cucumbers in great perfection in the Stove; the ſeed, &c. being planted in pots or boxes of rich dry earth any time in winter or early ſpring, placing thoſe of the kidney-beans any where in the houſe, and the cucumbers near the top glaſſes upon ſhelves, juſt over the back walk and flues; may alſo raiſe ſmall ſallading any time in winter, ſown in boxes or large pots, &c. likewiſe ſtrawberries, the plants being trained in the open ground in the garden to a bearing ſtate, either the Alpine or ſcarlet ſort, (ſee FRAGARIA) and being then potted with balls of earth about their roots early in autumn, or even in winter whilſt the weather continues open, and placed in the Stove near the glaſſes any time from January till March, either all at once, or at different times for ſucceſſion, they will produce plenty of fine ſtrawberries. I have alſo forced excellent early aſparagus in the Stove, when there has happened to be a vacancy in the bark-bed to admit of plunging the plants in the tan, as directed in forcing them by dung hot-beds, under the article ASPARAGUS.

As to flowering ſhrubs, if an early bloom is required, they may be forwarded conſiderably in the Stove; ſuch as roſes, honeyſuckles, jaſmines, and various other principal ſorts that have merit in the beauty or fragrancy of their flowers; the plants being previouſly potted, may be placed in the Stove in winter, or any time from January till February or March, &c. either in a common pine-apple Stove, or a forcing Stove, they will flower freely a long time before their natural ſeaſon.

And as to the fruit-tree kinds, ſeveral ſorts may be fruited very early in the forcing Stove particularly, eſpecially moſt of the ſtone fruits, and ſome of the berry kinds; ſuch as cherries, peaches, nectarines, apricots, plums, grapes, and figs; alſo gooſeberries, currants, raſpberries, &c. all of which being previouſly trained in the open ground to a bearing ſtate, then planted in the Stove; or ſome in pots to move to the Stove occaſionally, beginning to force them any time in January, or early in February; ſome being planted finally in the ground or border of earth formed within the Forcing-Stove; others in pots, particularly ſome of the dwarf cherries, and ſmaller fruit ſhrubs; but the peaches, nectarines, apricots, plums, vines, and figs, ſhould generally be planted againſt a trellis erected near the back and front, to be

be trained as wall trees; alſo ſome of the early May and duke cherries; tho' cherries generally ſucceed very well in ſtandards, both full and half ſtandards, and dwarfs; pruning them generally to moderate heads, that they may not become high or ſpreading, to interfere with each other, or ſhade the other trees too much. Vines alſo in particular, may likewiſe be planted in the open ground againſt the outſide of the front of the Stove, and their ſtems trained in through holes made in the wall or timber framing; and the branches within trained up thinly againſt the ſlope and end ſaſhes, &c. to ſlight trellis work fixed to the bearers, ſo as the ſaſhes have full liberty to ſlide; obſerving ſuch vines as are thus trained in from the outſide of the Stove, ſhould in winter when ſevere froſts prevail, have that part of their ſtems without, defended by a cloſe wrapping of hay-bands; alſo the ground over their roots, eſpecially towards ſpring, when the vines begin to ſhoot withinſide of the Stove.

Remarking, as to the time to begin forcing by fire-heat the above hardy plants and fruit-trees, that, if in a forcing Stove for the purpoſe, January or beginning of February is the proper ſeaſon; then ſhut all the glaſſes cloſe, except giving air occaſionally as hereafter hinted; making the fires moderate at firſt, encreaſing their ſtrength gradually, though always in a moderate degree, never above the temperature of the pine-apple ſtandard, continuing the fires every night and morning in the above moderate manner; alſo occaſionally in the day time, in ſevere froſts or cold damp weather. If, however, there is only a common pine-apple Stove for general uſe, you ſhould generally have all your plants intended for forcing planted in pots, &c. in order that they may be moved into the Stove only at the proper ſeaſon; or, to have a regular ſucceſſion, may introduce them at two or three different times, at a fortnight or three or four weeks interval, having plants, &c. for this purpoſe ready potted, and in winter placed under occaſional ſhelter from froſt, till placed in the Stove.—All the plants thus forced in the Stove muſt be allowed the benefit of freſh air in fine days, and occaſional waterings; as to freſh air, if in a common pine-apple Stove they can only enjoy the advantage of air in common with the other plants in that department, as directed in the culture of Stove plants: but if they are in a forcing Stove by themſelves, freſh air may ſometimes be admitted more freely, eſpecially after the plants have begun to ſhoot; chuſing, however, only fine mild ſunny days for this, by ſliding open the lights a little in the heat of the day; encreaſing the portion of air as the warm ſeaſon advances, ſhutting all cloſe towards evening: and as to water, all the plants, both herbaceous kinds, ſhrubs, and trees, will require occaſional moderate waterings; thoſe in pots will require it more frequent than ſuch as are planted fully in the ground: chuſing generally warm ſunny weather for this work, eſpecially in winter and early ſpring; and give it always in due moderation.

As ſoon as theſe forced hardy plants are paſt perfection, either as to flowering or fruiting, &c. thoſe of them you intend preſerving for future uſe, and that are in pots, ſhould be moved into the open air, to recover themſelves, as ſome of them may ſerve for the open ground, and ſome alſo to force again after having a ſummer's growth in the full air, eſpecially the ſhrub and tree kinds; and as to ſuch as are planted in the full ground in forcing Stoves, ſhould, as ſoon as the flowers and fruit are paſt, be fully expoſed to the open air, by removing all the glaſſes, that they may receive the full advantage of the air, ſhowers, dews, &c. all ſummer, and until nearly the arrival of next forcing ſeaſon, that they may regain proper ſtrength and vigour to yield their produce in due perfection the following year; obſerving towards winter, or at the approach of ſharp weather, to put on the glaſſes again, in order to give occaſional ſhelter till the time to begin forcing, and then the Stove muſt be ſhut up cloſe, and managed as before.

According as any of the fruit-trees fail, or become bad bearers, let them be removed in due time, and their place ſupplied with new ones from the nurſery.

STROBILUS, a ſpecies of ſeed-veſſel commonly called *Cone*.

The *Strobilus* or Cone *(Conus)* is the fruit or ſeed-veſſel of the coniferous or cone-bearing trees, ſuch as pine, fir, cypreſs, juniper, &c. being of a conical figure, formed of a conic *amentum*, compoſed of ſcaly imbricated calices, becoming ſo many hard woody ſcales, laid over on one another like tiles, cloſely involving the ſeeds. See CONIFERÆ and CONUS.

This

This ſpecies of ſeed-veſſel being generally of a conical form is commonly called a Cone, (*Conus.*)

STYLUS, the Style of the flower.

The Style is that long ſlender part of the *piſtillum* placed on the top of the germen, in the center of the flower, elevating the ſtigma or ſummit of the *piſtillum*, or female organ; and is correſponding to the vagina in animals, as being the tube through which the effluvia of the farina or fertilizing male duſt of the antheræ emitted on the ſtigma, paſs to the germen or ſeed-bud, for the impregnation of the embryo ſeeds. See PISTILLUM, GERMEN, and STIGMA.

Every female and hermaphrodite flower is furniſhed with a *piſtillum*, and conſiſt of three parts, viz. the germen, Style, and ſtigma; the germen ſupports the Style, and the Style the ſtigma on its ſummit. Thus the Style connects the germen and ſtigma; and in plants apparently without, or with but a very ſhort Style, the ſtigma is placed on the germen; as in *papaver*. The number of Styles vary in the plants of different genera, the greater number having only one Style, others two, three, to five, ten, or many Styles, which in each flower is generally equal in number to that of the germen or ſeed-bud, each germen being furniſhed with its own particular Style; ſo that flowers having but one germen have generally but one Style; and thoſe with two, three or many germens, have the like number of Styles. There are, however, ſome exceptions, as there are plants which have more than one Style for a ſingle germen or ſeed-bud, as in the umbelliferous tribe; others on the contrary have a ſingle Style common to many ſeed-buds, as in the verticillate tribe of lip flowers. And in another tribe of plants the Style is ſingle at its origin, but ſoon divides or branches out into as many ramifications as there are diviſions or cells in the cavity of the ſeed-bud, ſuch as in the geraniums and mallow tribe, which have their Styles divided above into five branches, correſponding to the five diviſions of the ſeed-bud or capſule.

From the number of Styles, and in their abſence that of the *ſtigmata* is founded the orders or ſecondary diviſions of the claſſes in the ſexual method. See CLASSES and ORDO.

The Style in moſt plants is erected like a column in the centre of the flower; in ſome, however, the Style is nodding or reclined, or in others is revolute or bent backwards; and ſometimes as in *nigella Arvenſis*, the five Styles being longer than the ſtamina, are firſt erect; afterwards when the flower is fully expanded, they are bent back, that the ſtigmas may touch the anthera of the ſtamina or male organ; and having thereby received the male duſt, they are again elevated, and ever after remain erect. For the moſt part the Style is always ſurrounded by the ſtamina, ſo that ſome of the *pollen* or male duſt of the antheræ is blown by the wind on the *ſtigma*.

As to proportion and dimenſion, the Style is either of equal length with the *ſtamina* as in moſt flowers; much longer, as in ſome others; and in ſome very ſhort, or even wanting, as in *papaver*, &c. in which the *ſtigma* ſits cloſe to the germen; and in ſubſtance the Style in ſome plants is thicker than the *ſtamina*; in others of equal thickneſs, and in ſome ſlenderer.

As to figure, the Style is either cylindrical and hollow like a tube, as in moſt plants; angular, as in *cana*; awl-ſhaped or tapering as in *geranium*; capillary or ſlender like a hair; or club-ſhaped, being thicker above than below, as in *leucoium*, the greater ſnow-drop, &c.

In point of ſituation, the Style is ſituated either on the top of the germen, as in moſt flowers; above and below the germen, as in *cappavis* and *euphorbia*; or on one ſide of the germen, as in roſe, raſberry, and other plants of the *icoſandria polygynia*; or on the baſe of the germen as in *alchemilla* or ladies-mantle, &c.

In reſpect to duration, the Style is either deciduous, falling off with the other parts of the flower, after the impregnation, as in moſt plants; or ſometimes permanent or abiding, as in the cruciform flowers of the *tetradynamia*.

STYRAX.

Storax, or Sweet Gum-tree.

It is a deciduous aromatic tree of the Eaſt, retained in our gardens to diverſify the greenhouſe and ſhrubbery collections; is famous for its medical gum called Storax, being a fragrant reſinous fluid, which the tree imparts by inciſion in the trunk; the very wood alſo imparts a ſweet odour.

Claſs

Claſs and order *Dodecandria Monogynia.*

*Characters.*] CALIX is ſhort, cylindric, monophyllous, and quinquedented.—COROLLA is monopetalous, infundibuliforme, with a ſhort cylindric tube, and ſpreading limb divided into five obtuſe ſegments.—STAMINA, about twelve or more awl-ſhaped filaments, diſpoſed circularly, having oblong erect antheræ.—PISTILLUM, a roundiſh germen below the corolla, ſingle ſtyle, with a truncated ſtigma.—PERICARPIUM, a roundiſh, unilocular, drupaceous fruit, containing two roundiſh nuts, convex on one ſide.

There is but one ſpecies, which in this country generally requires the culture of hardy green-houſe plants, during its minor ſtate; but when hardened by degrees to a more mature growth, it may be turned out into the full ground in a warm ſituation, finally to remain.

The ſpecies is,

STYRAX *officinale.*

*Common or officinal Styrax.*] Riſes with a woody ſtem, branching on every ſide, twelve or fifteen feet high, or more, covered with a ſmooth greyiſh bark, oval, moderate-ſized, alternate leaves, hoary underneath; and bunches of white odoriferous flowers at the ſides of the branches in June; ſucceeded ſometimes by fruit, but rarely ripens in England.

This tree is a native of Syria, and moſt parts of the Eaſt; where it is highly valued for its fragrant medical gum; which it exſudes from the trunk and branches.

It is, although an exotic of hot countries, moderately hardy, as in this country it only requires ſhelter of a frame or green houſe from ſevere froſt while young, for three or four winters; afterwards may be planted in the full ground againſt a ſouth wall, and other ſheltered ſituations; training ſome againſt the wall, others take their natural growth, and allow occaſional ſhelter of mats in very ſevere weather.

It is propogated commonly by ſeeds, obtained from abroad by the ſeedſmen; ſowing them in pots of light earth an inch deep, obſerving as they are of a hard ſtony nature, they rarely come up the firſt year; ſo it is proper to plunge the pots under a frame during cold weather, and in the ſhade in ſummer, and in the ſecond ſpring; then as the ſeed will be ready to germinate, if plunged in a hot-bed, it will forward them exceedingly, being careful to give water, and to harden the ſeedlings gradually to the full air in ſummer, in a ſhady place during the hot weather, and often watered; and in winter place the pots under a garden-frame, &c. to have ſhelter from froſt; then in ſpring following pot them off ſeparately, and manage them as hardy green-houſe plants for three or four years, when ſome of them may be turned out unto the full ground in a ſheltered ſituation, as already hinted, and ſome may be retained in pots for the green-houſe collection.

SUCCULENTÆ, (*Succus*, Juice) Succulent plants.

Succulent Plants are ſuch as have thick fleſhy leaves, &c. abounding with juice, being principally of the herbaceous tribe; and ſome become of a ligneous nature in the ſtem, though Succulent in leaf; and of the Succulent kind there are perennials, biennials, and annuals; but principally perennial and evergreen.

Of the Succulent tribe many are tender exotics, inhabitants of the hot parts of the world; and ſome are of hardy growth; are moſtly inhabitants of dry barren ſoils, and rocky places; many of which being of ſingular growth, are retained in our garden collections as plants of variety and curioſity; conſiſting of many different genera, each compriſing more or leſs varieties, ſome for the green-houſe and ſtove, and ſome for the open ground. The following is a liſt of the principal genera, and their varieties, collected into one point of view, referring to their reſpective articles for particulars.

AGAVE, Great Amenum *Aloe.* (*All the ſpecies.*)

ALETRIS, Guinea *Aloe.* (*All the ſpecies.*)

ALOE, African *Aloe.* (*All the ſpecies.*)

ANTHERICUM, Spider-wort. —— Aloe-leaved. — Mock Aſphodel.——*Anthericum*, Shrubby, Onion-leaved.

CACALIA, Foreign Colts-foot.—Ficoides African Cacalia.—Anteuphorbium Æthiopian *Cacalia.*—Kleinia or Indian *Cacalia.*—Papillary Æthiopian *Cacalia.* — (*All of ſomewhat ſhrubby growth.*)

CACTUS, Melon-thiſtle, including alſo the *Cereus* or Torch-thiſtle, and the Opuntia, or Indian Fig. (*All the ſpecies.*)

COTYLEDON, Navel-wort. (*All the ſpecies.*)

CRASSULA, Leſſer Orpine. (*Moſt of the ſpecies.*)

EUPHOR-

EUPHORBIA, Burning thorny plant. — (*Moſt of the ſorts.*)

MESEMBRYANTHEMUM, Fig Marigold. (*All the numerous ſorts.*)

PORTULACA, Purſlane. (*All the ſorts.*)

SAXIFRAGA, Saxifrage. —— Cotyledon Saxifrage, &c.

SEDUM, Leſſer Horſe-Leek, Orpine, and Stone-crop. (*Moſt of the ſorts.*)

SEMPERVIVUM, Live-ever, or Common Houſe-leek. (*All the ſorts.*)

TETRAGONIA. (*Both the ſpecies.*)

YUCCA, Adam's Needle. (*All the ſorts.*)

ZYGOPHYLLUM, Bean-caper. (*Moſt of the ſorts.*)

As many of theſe Succulents are eſteemed ſingular curioſities in the vegetable creation, they are cultivated as ſuch in moſt of our eminent gardens; a general deſcription of the different ſorts, their propagation and culture, may be ſeen in the proper places, under the heads of their reſpective genera.

They are moſtly of a very carnoſe or fleſhy nature, both in ſtem, leaves, &c. abounding with humidity, and moſtly evergreen; and many of them aſſume great ſingularity in their general port or habit; and as to magnitude, ſome when they flower obtain thirty or forty feet ſtature, as the *agave Americana*; others, ſuch as the ſtone-crop, &c. not above three or four inches. See each under its proper genus.

Moſt of the ſorts being originally inhabitants of dry ſoils, or ſaxtile or rocky ſituations, walls, tops of old buildings, and ruins, &c. and being naturally all very replete with moiſture, ſhould therefore in their culture be moſtly planted in light dry, lean earth, or dry rubbiſhy compoſt (ſee COMPOSTS); otherwiſe, on account of their great humidity, are very apt to rot off in winter, more particularly the very Succulent and tender kinds of the green-houſe and ſtove (ſee GREEN-HOUSE and STOVE PLANTS); and which ſorts in particular are always to be kept in pots, in order to be placed among the plants of thoſe two conſervatory departments, as their nature or temperament require, and managed accordingly, as hinted under the *Culture* of *Green-houſe* and *Stove-Plants* aforeſaid: always kept from too copious moiſture; for as they naturally abound in juice, they require very little water at any ſeaſon; but in winter eſpecially ſhould have it but very ſeldom and ſparing; and ſome of the moſt Succulent hardly any water during all that ſeaſon.

And as to the hardy kinds, ſuch as the common houſe-leek, or pine, ſtone-crop, &c. (ſee their proper genera) will grow in the open air, on rock-work; dry rubbiſhy borders, tops of walls and buildings; and are proper plants to introduce in artificial ruins and rocks, &c.—May alſo be planted in pots to move to any place occaſionally. With reſpect, however, to the general deſcription, uſes, propagation, and culture of this tribe of plants, we refer to their reſpective genera, where every thing is fully exhibited; but the principal curious ſorts being only here brought under one head, ſerves as a hint of the nature of theſe kind of plants, and to aſſiſt the memory, ſo as more readily to furniſh a collection of the different ſorts.

SUCCUS, Sap, or the Juices of Plants.

The main vegetable juices or fluids are drawn by the root from the body it adheres to, whether it be earth, water, or other ſubſtance; thence aſcends to the ſtem, branches leaves, flowers, and the minuteſt part of the fructification, &c. But whether the ſame Sap, ſo diffuſed to the extremities of the plant, ever returns, and that there is a circulation of Sap in plants analogous to that of the blood in animals, is a queſtion, which will probably never receive a ſatisfactory anſwer.

Though many of the eminent naturaliſts contend for the circulation, and that the ſame juice deſcends again to the root; yet by accurate experiments it appears, that the Sap aſcends not by the bark, but by the capillaries or fibres of the wood; and the curious obſervation of many renders it highly probable that the fluid which aſcends by the ſaid capillary veſſels of the wood, deſcends to the root by the larger fibres of the inner bark that are moſt contiguous to the woody body. In ſupport of this, the ſame experiments of ligature and inciſion which evince a circulation of the blood in animals, ſucceed in the like manner in vegetables, particularly in ſuch as abound with a milky Sap; ſince if the ligature or bandage is faſtened tight round them, the part above is found to ſwell very conſiderably, and that below it only a little, whence it appears there is a juice deſcending from the branches: and as to the experiment of inciſion, it has likewiſe been obſerved, that upon a tranſverſe inciſion being made into the trunk of a tree, the juice which is ex-

expended or flows from the wound, proceeds in greater quantities from the upper lip of the gash, where the ſwelling likewiſe is much larger than below; ſo that from the reſult of ſuch experiments it is rendered ſomewhat more than probable, that the ſap returns from the extremity of the branches to the root; thence into the earth again. But ſome contend, that inſtead of the ſame juices going and returning, there are two ſeveral juices; the one terreſtrial, as being imbibed from the ſoil, digeſted in the root, and from thence tranſmitted to the extremity of the plant; the other is ſuppoſed to be aerial, and received from the moiſture of the air entering in at the extremity of the branches, and ſurfaces of the leaves. So according to this concluſion, the aſcending and deſcending juices are not the ſame; and indeed with reſpect to the aerial ſap, experiments have determined that the plant derives part of its nouriſhment by the extreme branches, and the leaves in general, and that the leaves contribute greatly both to the abundance and motion of the ſap; for it is obſervable of new-planted trees in particular, having many of their branches lopped, they will not proſper near ſo well as thoſe trees left entire; and if a tree when high in ſap is diveſted of its leaves, it will be found to retard the growth, both of its ſhooting, and that of the flowers and fruit.

However, the firſt and principal ſap of a plant is furniſhed by the earth entering the roots in form of a fine and ſubtle water, which, the nearer it is to the root, the more it retains of its proper nature; and the farther from the root the more action it has ſuſtained, and the nearer it approaches to the nature of the vegetable.

But what courſe the ſap takes after it is imbibed by the roots, is not very clear; the veſſels that take it up to convey it to the plant, are too fine to be traced, and hence it remains doubtful, whether it is by the bark, or the woody part, or the pith that the plant is fed.

In this the naturaliſts differ in opinion. Some contend for the bark, others for the wood, though in the former caſe they obſerve, that the juice raiſed from the earth by the capillary tubes or pores of the wood is here ſuppoſed to deſcend by the larger fibres placed in the inmoſt part of the bark immediately over the wood; in which deſcent the ſap being now ſufficiently prepared adds ſome of its ſubſtance to the contiguous wood, and thereby gradually encreaſes its bulk, ſo that the bark is thus alſo ſuppoſed to ſerve divers purpoſes; for it not only tranſmits the nutritious juices to the plant, but likewiſe contains certain fat oily juices to defend the fleſhy external parts from the injuries of the weather.

In ſome caſes, even the whole plant is no more than bark; the pulp or woody part having been eaten or rotted out, except juſt the outſide ſhell, as often occur in willow, elm, &c. yet continue growing, and live a long time in that ſtate.

On the other hand, thoſe who contend that the wood conveys the principal nouriſhment, obſerve, that the whole woody body conſiſts entirely of ſlender longitudinal capillary tubes or fibres, running parallel to each other from the root up the trunk and branches, being proper to receive in a fine vapour or humour, in the aſcent of which the fibres become open, and their ſubſtance encreaſed. And thus the trunks of trees are ſaid to encreaſe in their circumference.

The motion of the nutritious juices of vegetables is found to be produced much like that of the blood in animals, by the action of the air, &c. for it is diſcovered that vegetables conſiſt of two orders of veſſels; 1. ſuch as receive and convey the alimental juices, anſwering to the arteries, lacteals, veins, &c. of animals; 2. the *tracheæ*, or air-veſſels, being long fine pipes or tubes poſſeſſing principally the wood or ligneous body, and ſerve to receive and tranſmit the air, neceſſary for preparing and giving motion to the humours or juices.

As to the nature of the vegetable fluids, it appears, that plants contain many different juices, ſuch as thoſe of the root, ſtem, bark, &c. thoſe of the leaves, the juices of the flowers, or genitals, and thoſe of the fruit, the preparative of the laſt, of which may be ſaid to be nature's final work.

However, the principal vegetable juices are generally reduced to two; the lymph or ſap; and the proper juice or blood of plants.

1. The lymph or ſap is a ſimple fluid, being without colour or ſmell, and little different from water; and mounts from the root to the ſtem, and remote parts of the plant, as before obſerved, in its proper veſſels, which are woody longitudinal hollow fibres, almoſt inconceivably fine, and always replete with ſap; which, however, in ſpring, is found in greateſt abundance, and then the bark is

eaſily detached from the wood. On the contrary, when the ſap-ſeaſon is paſt, the bark is found cloſely applied, and, as it were, glued to the wood; or when a tree is in high ſap, and ſtripped of the leaves, the bark, in a few days, will adhere as cloſely to the wood as in winter.

2. The other principal fluid, denominated the proper juice or blood of plants, and analagous to the blood in animals, contained in proper veſſels, called likewiſe from their uſe vegetable blood, are ſtraight longitudinal fibres, larger than the lymphatic or ſap veſſels, and leſs numerous, which are filled with the proper juice, which is generally compound or coloured, and eaſily diſtinguiſhed by its colour, ſmell, and ſubſtance, from the lymph or ſap, it being either green, as in ſome plants, white as in ſpurge, fig-tree, and dog's-bane; yellow, as in celandine, red as in dragon's blood, mucilaginous or gummy, as in the jujube and mallow tribe, or reſinous, as in the coniferous plants. So it is from the variety in colour and ſubſtance that the fluid in queſtion is called the proper juice; each ſpecies of plant being ſuppoſed to contain a fluid peculiar to itſelf; and in this proper juice reſide the ſmell, taſte, and virtue of the plants.

SUCKERS.

Suckers are young offspring plants, ariſing immediately from the roots of older vegetables; and being tranſplanted, readily grow and become proper plants, in all reſpects like the mother plant that produced them, being therefore very eligible for the work of propagation.

So that Suckers may be conſidered as a ſort of vegetable ſpawn or progeny, emitted from the roots of certain trees, ſhrubs, and other plants, to propagate their reſpective ſpecies and varieties: and a very conſiderable ſhare of the vegetable creation multiply exceedingly by this means; for numerous ſorts continue ſending up great plenty of Suckers every ſummer, each Sucker furniſhed with roots or fibres, and in one ſeaſon form proper plants for tranſplantation; thus proving a very plenteous and expeditious method of propagation both for numerous tree and ſhrub kinds in particular, as well as for many herbaceous vegetables; which ſending up Suckers from the root in ſpring and ſummer, will be fit for tranſplanting the following autumn.

The propagation by Suckers is alſo, in certain caſes, a ſure method to continue any approved or intended ſpecies, or variety, the ſame; remarking, however, of grafted and budded trees, that Suckers partake only of the nature of the ſtock; as for example, ſuch Suckers as ariſe from a codlin ſtock, grafted with any other ſort of apple, will continue invariably a codlin, without partaking any thing of the nature of the graft; the ſame being alſo obſervable of all other grafted trees and ſhrub kinds; obſerving therefore not to miſtake ſo far in propagating by Suckers from the roots of grafted and budded trees, worked on different ſtocks, to ſuppoſe the Suckers will produce the ſame ſort of fruit, &c.

But in trees, &c. that are wholly the ſame ſort root and top, the Suckers thereof will alſo prove the ſame invariably in every mode of growth, as certainly as is obtained by layers, cuttings, grafting, &c.

As to the ſeaſon for taking up or tranſplanting Suckers, it may be performed almoſt any time in open weather from October till March, being careful to dig them up from the mother-plant with as much root or fibres as poſſible, and trim them ready for planting, by ſhortening long ſtraggling fibres, and cutting off any thick knobbed part of the old root that may adhere to the bottom, leaving only the fibres ariſing from the young wood; though it is probable ſome will appear with hardly any fibres; but as the bottom part having been under ground, and contiguous to the root of the main plant, they will naturally be much diſpoſed to ſend forth plenty of fibres for rooting. The ſtems of ſome of the ſhrub and tree kind particularly, will alſo require trimming occaſionally, ſuch as cutting off all lower laterals; and if any have long, ſlender, and weak tops, or ſuch that you intend ſhall aſſume a more dwarfiſh or buſhy growth, may be ſhortened at top in proportion, to from about half a foot, to one or two feet in length, according to their nature or ſtrength, and as the caſe may require: others that are more robuſt and ſtrong, or that you deſign ſhall run up with taller ſtems, may have their tops left entire, or ſhortened but little, as it ſhall ſeem neceſſary for the uſes intended.

Being thus taken up and trimmed, proceed to plant them in rows in the nurſery; the weak Suckers plant ſeparately in cloſe rows; alſo the ſhortened ones by themſelves, and the ſtronger plants likewiſe ſeparately in wider rows; ſo that the rows may be from one

one to two feet aſunder, in proportion to the ſize and ſtrength of the Suckers.

After being thus planted out in nurſery rows, allow them the common nurſery culture of cleaning from weeds in ſummer, and digging the ground between the rows in winter, &c. and in from one to two or three years; they will be arrived to due ſize for final tranſplantation.

Though ſome kinds of trees, &c. produce Suckers ſo ſtrong in one ſeaſon as to be fit for planting at once, where they are finally to remain; ſuch for example, as ſome ſorts of roſes, and numerous other flowering ſhrubs; likewiſe ſome of the ſtrong-ſhooting gooſeberries, currants, raſberries, and the like kinds.

And ſometimes many of the ſhrub kind in particular, having produced a quantity of Suckers from the root, and theſe ſuffered to ſtand and grow up, each to a large plant, the whole from one root forming a conſiderable buſh, as may often be obſerved in gooſeberries, currants, and many other ſhrubs; and in which caſe each ſuch buſh being taken wholly up at the proper ſeaſon before mentioned, may be divided to the bottom into ſo many ſeparate plants; and as each Sucker will be amply furniſhed with plenty of roots, and of due ſize for flowering and fruiting, may plant them, if required, at once, where they are always to ſtand.

But the propagation by Suckers is by ſome objected to for any general ſupply, on a ſuppoſition that the trees, &c. ſo raiſed, are more adapted to run too conſiderably to Suckers, and over-run the ground, than ſuch as are raiſed by any other method: however, it may generally be obſerved of ſuch trees and ſhrubs as are naturally diſpoſed to ſend up many Suckers, that by whatſoever method they are propagated, whether by ſeeds, ſuckers, layers, cuttings, &c. they commonly ſtill continue their natural tendency to multiply by Suckers in the ſame abundance.

However, when it is required to have any ſorts produce as few Suckers as poſſible, not to over-run the ground, or diſfigure the plants, it is proper both at the time of ſeparating the Suckers, or planting them off from the main plant, and at the time of their final removal from the nurſery, to obſerve if at the bottom part they ſhew any tendency to emit Suckers, by the appearance of prominent buds, ſhould rub all ſuch off as cloſe as poſſible, which will prevent the production of Suckers proportionably.

As, however, many ſorts of trees and ſhrubs are ſubject to throw out Suckers, conſiderably more than may be wanted at all times for multiplication; and that if permitted to remain, would over-run the ground, and become unſightly, as well as prejudice the parent plants; they ſhould therefore be always cleared away annually at leaſt: but if not wanted for propagation, it is proper to eradicate them conſtantly as they are produced in ſpring and ſummer.

SUFFRUTICOSUS *Planta.*

Under-ſhrubby Plants.

Suffruticoſe Plants are a ſort of ligneous or ſomewhat woody vegetables, that are between a ſhrubby and an herbaceous nature, exemplified in thyme, ſage, hyſſop, winter-ſavory, and ſuch like plants.

SUN.

The Sun is doubtleſs the firſt mover of all vegetable motion; for as the naturaliſts obſerves, the Sun qualifies the air, which otherwiſe by its great frigidity would ſtop the whole courſe of nature: but by the Sun's diffuſive power of light and heat, it exhilerates not only the race of mankind, &c. but the vegetable creation.

Its genial chearful rays promotes the growth of all vegetables, by its influence upon the ſoils; warming and chearing the pores of the earth, when diluted and ſodden with too much wet, and puts the fibres of plants in motion for ſeeking their food; and its influential power operates on the branches, leaves, and fruit.

Plants, therefore, which in their growth are more or leſs expoſed to the Sun, are, for the moſt part, more proſperous, forwarder, and attain greater perfection than ſuch as grow in any conſiderable ſhade.

Likewiſe moſt fruits in a ſunny expoſure are conſiderably more beautiful, ſooner ripe, and acquire ſuperior quality in flavour, &c. to thoſe growing in ſhady places.

The Sun's attractive power is very conſpicuous in the exhalation or diſpelling of thoſe crude and unwholeſome vapours with which the earth is ſo often infeſted, which would otherwiſe make it noxious, and render the earth a miſerable deſart: but more particularly the Sun warms, and enriches the ſoil, and prepares the juices for being ſucked in by the fibres of plants.

For this reaſon, ground deſigned to be fallow, ſhould always be turned up in rough ridges, to give free acceſs to the influence of the ſun and air. Likewiſe all compoſt heaps ſhould generally be prepared in ſunny ſituations, in the full air, not in bye ſhady corners, or in ſheds, as often practiſed.

SYMPHYTUM, Comfrey.

This genus of plants conſiſts of hardy herbaceous perennials, for variety in gardens and medicinal purpoſes, having long fleſhy roots ſending up annual ſtalks from half a yard to two or three feet high, adorned with oval and ſpear-ſhaped leaves, and terminated by monopetalous bell-ſhaped flowers.

Claſs and Order *Pentandria Monogynia.*

*Characters.*] CALIX is upright, pentagonal, five-parted at the brim, and permanent. —COROLLA is one bell-ſhaped petal, with a very ſhort tube, a tubular ventricoſe limb; divided at the brim into five obtuſe reflexed ſegments, having the chaps or opening armed with five ſubulate rays connected in a cone. —STAMINA, five awl-ſhaped filaments, placed alternately with the rays of the chaps of the corolla, and erect acute antheræ.—PISTILLUM, four germina, ſupporting a filiforme ſtyle, crowned with a ſimple ſtigma.—PERICARPIUM, none; four gibbous, acute pointed ſeeds lodged in the permanent calix.

There are but three ſpecies, one is an inhabitant of England, the other two is of foreign growth, and are all hardy plants.

The ſpecies are

[1] SYMPHYTUM *officinalis.*

*Common officinal Comfrey*] Hath long, thick, fleſhy, deeply-ſtriking roots, black without and white within; crowned with large, oval, ſpear-ſhaped, rough leaves; upright, thick, branchy, rough ſtalks, two or three feet high, garniſhed with decurrent leaves, and terminated at top by bunches of drooping flowers, of different colours in the varieties, appearing in June and July.

*Varieties are*] Common white flowered—purple-flowered — blue-flowered — yellow-flowered — red-flowered: but the white and purple are the moſt common.

It grows wild in England, eſpecially the white-flowered ſort, by ditch ſides, and other humid ſhady ſituations; but is ſometimes kept in gardens for variety and medical uſes, the root being the uſeful part.

[2] SYMPHYTUM *tuberoſum.*

*Tuberoſe-rooted German Comfrey*] Hath a root compoſed of many thick fleſhy tubers, ſending up inclinated rough hairy ſtalks a foot and a half high, long, narrow, acute-pointed, rough, hairy leaves, alternate below, and oppoſite at top; and the ſtalks terminated by bunches of pale yellow flowers, in June and July.—Grows naturally in Germany, France, and Spain.

[3] SYMPHYTUM *Orientale.*

*Oriental Comfrey*] Hath a thick fleſhy root, upright rough ſtalks, half a yard or two feet high; oval rough leaves, on ſhort hairy foot-ſtalks, and the ſtems terminated by drooping bunches of blue flowers, in March and April. It grows by river ſides in the Eaſt, near Conſtantinople.

All theſe three ſpecies are of the herbaceous tribe, and perennial in root, but annual in leaf and ſtalk, which riſe in ſpring, and produce flowers and feed the ſame year; the firſt and ſecond ſort in particular ripen plenty of ſeed; the other not always in perfection in England: and ſoon after the ſeed is ripe, the ſtalks decay.

As to their merit as garden plants, they may be employed in large herbaceous collections, to encreaſe the variety in the pleaſure-ground; and the firſt ſort in particular. SYMPHYTUM *Officinalis* may alſo be introduced in gardens as an officinal plant in medicine: all the three ſorts are very hardy, and will proſper in any common ſoil and expoſure; but delight moſt in ſhady moiſt places; planting thoſe deſigned for variety thinly, in aſſemblage with other hardy perennials, and thoſe intended for medical uſes plant in beds or borders together, in rows, two feet aſunder.

*Method of Propagation, &c.*

Their propogation is affected by ſeed, and by parting the roots.

By Seed.—Sow it in ſpring in a bed or border of common earth, and rake it in: they will ſoon come up plentifully, and in autumn the plants will be fit to tranſplant where wanted, in the manner above obſerved.

By parting the Roots.—This may be effected with expedition, and abundance in autumn, or early ſpring. Almoſt every bit of the root will grow, planting them either in nurſery beds, or at once where they are to remain; and they will ſoon multiply into large plants.

SYRINGA,

SYRINGA, Lilac.

Two noted deciduous flowering ſhrubs compoſe this genus, each comprehending ſeveral elegant varieties, adorned with oval heart-ſhaped and ſpear-ſhaped ſimple leaves, and large bunches of ſmall, monopetalous, funnel-ſhaped, odoriferous flowers, of a very ornamental appearance.

Claſs and order *Diandria Monogynia.*

*Characters.*] CALIX is ſmall, monophyllous, tubulated, four-parted at the brim, and permanent. — COROLLA is monopetalous, funnel-ſhaped, with a long cylindrical tube, divided above into four narrow revolute ſegments.—STAMINA, two very ſhort filaments, with ſmall antheræ.—PISTILLUM, an oblong germen, ſlender, thread-like ſtyle, and a thick bifid ſtigma. — PERICARPIUM, an oblong, compreſſed, acuminated, bivalvous, bilocular capſule, having a ſingle ſeed in each loculi, being oblong, acuminated, and with a membranaceous border.

There are only two ſpecies, which, and their varieties, are fine ornamental furniture for the ſhrubbery compartments. Are ſuppoſed to be natives of Perſia, but have been long in the Engliſh gardens as eminent flowering ſhrubs.

The ſpecies are

SYRINGA *Vulgaris.*

*Common Lilac*] Riſes with an upright ſhrubby ſtem, ſoon dividing into many branches, and grows fifteen or twenty feet high; garniſhed with oval-cordated, or heart-ſhaped leaves, placed oppoſite; and the flowers produced at the ends of the young ſhoots, in large, erect, conical bunches, of different colours in the varieties, appearing in May.

*Varieties are*] White-flowered — blue-flowered—purple-flowered, or Scotch Lilac.

This ſpecies and varieties have been long reſidents of our gardens, as elegant flowering ſhrubs, to decorate the wilderneſs and ſhrubbery clumps; are all ſo very hardy as to grow almoſt any where without trouble, exhibiting a very ornamental appearance, in the great profuſion of their flowers, which alſo imparts a very agreeable odour.

SYRINGA *Perſica.*

*Perſian Lilac, ſometimes erroneouſly called Perſian Jaſmine*] Riſes with a ſlender ſhrubby ſtem, dividing into long, ſlender, flexible, browniſh branches, growing five or ſix feet high, adorned with narrow, ſpear-ſhaped, entire leaves, placed oppoſite; and the young ſhoots, terminated by long paniculated bunches of bluiſh, and other coloured flowers in the varieties; appearing the end of May, and beginning of June.

*Varieties are*] Common purple-flowered, —white-flowered — blue-flowered — laciniated, or cut-leaved Perſian Lilac, having the leaves deeply cut into ſeveral ſegments. All of which varieties of this ſpecies are moſt delightful flowering-ſhrubs, and their flowers have an agreeable fragrance.

Both theſe ſpecies of Lilac, and their varieties, are very hardy ſhrubs, of the deciduous tribe; and although originally inhabitants of Perſia, grow freely in the open ground in any expoſure, and reſiſt the ſevereſt froſts; having been many years in the Engliſh gardens as ornamental flowering ſhrubs; all the ſorts flowering profuſely, and ornamentally, early in ſummer, each panicle of flowers being large and conſpicuous, compoſed of numerous florets, or ſeparate flowers, and continuing near three weeks in beauty, ſucceeded in the firſt ſpecies, and its varieties, by plenty of ſeed; but the ſecond ſort rarely ripen any in England.

As therefore theſe fine ſhrubs are ſo hardy, and eaſy of culture, they highly merit admittance into every pleaſure-ground, large or ſmall, being excellently adapted both to embelliſh the premiſes, and encreaſe the variety. They are raiſed in abundance in all the public nurſeries for ſale.

They may be tranſplanted almoſt any time in open weather from October to March, in any common ſoil and ſituation, and from a few plants of each ſort they will ſoon abundantly encreaſe the ſtock by ſuckers, &c. and as to culture, obſerve of the *Syringa Vulgaris*, or common Lilac in particular, that as it generally throws out numerous ſuckers annually, they ſhould be taken off accordingly, otherwiſe they will ſoon over-run the ground near them, and prevent the mother plant from flowering in due perfection.

*Method of Propagation.*

The propagation of both the ſpecies, and their varieties, is moſt eaſily effected by ſuckers, and layers; alſo by ſeed. But this firſt ſort in particular throws out numerous ſuckers, and produces alſo plenty of ripe ſeed for ſowing.

By

By Suckers.—Numerous ſuckers riſe annually from the roots, though generally more abundantly from the firſt than ſecond ſpecies; and by which all the ſorts may be moſt readily propagated; taking them up any time from autumn till ſpring in open weather, with roots to each, and plant them in nurſery-rows two feet aſunder, to remain for a year or two, or till wanted for final tranſplantation.——See SUCKERS.

By Layers.—Layers of all the ſorts will readily grow, and form proper rooted plants in one year; chuſing the young pliable ſhoots in autumn, and lay them in the common way; they will be well rooted by autumn following, and ready for planting off in nurſery-rows; as directed for the ſuckers.

By Seed.—The firſt ſpecies, and varieties, ripen plenty of ſeed annually in autumn; and by which all the varieties may be raiſed, all of which are generally permanent, or retain their difference from ſeed; which ſhould be ſowed in October or November in a bed of common earth, either broadcaſt or in drills, and covered half an inch deep: they will come up in the ſpring, and in ſpring after the ſeedling plants may be ſet out in nurſery-rows two feet aſunder; and one diſtant in the rows, to have two or three years growth, when they will be fit for the ſhrubbery.

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# T.

TAGETES, African and French Marigold.

This genus is compoſed of noted herbaceous tender annuals, of the flowery tribe, for adorning the pleaſure-ground in ſummer; they riſing with large branchy ſtems, and full heads, two or three feet high, ornamented with pinnated leaves, and all the ſtems and branches crowned with large, compound, radiated flowers.

Claſs and order, *Syngeneſia Polygamia Superflua.*

*Characters.*] CALIX is ſimple, monophyllous, pentagonous, and quinquedented. COROLLA, is compound and radiated, conſiſting of numerous tubular, quinquefid, hermaphrodite florets in the diſc, and ligulated female florets in the radius or circumference. —STAMINA, in the hermaphrodite florets, five very ſhort filaments, with cylindric antheræ. — PISTILLUM, an oblong germen, filiforme ſtyle, having a bifid reflexed ſtigma.—PERICARPIUM, none; each floret ſucceeds to a ſingle linear compreſſed ſeed, crowned by five acuminated, erect, unequal ariſtæ.

There are but three ſpecies of *Tagetes*, two of which only are common to England, each comprehending many varieties; all of them tender annuals, and generally require the aid of hot-beds to raiſe and forward them at firſt, planting them out afterwards in the open ground to grow to perfection; which they attain in July and Auguſt, producing a great profuſion of flowers, both ſingles and doubles; but the latter are conſiderably the moſt ornamental, they growing large, and full to the very centre, appearing both conſpicuous and ornamental, for two or three months in autumn, having different properties in the reſpective varieties, in reſpect to plenitude, colour, and variegations; but have moſtly a very diſagreeable odour.

The ſpecies are,

1 TAGETES *erecta.*

*Upright Mexican Tagetes, commonly called African Marigold, or African*] Riſes with an erect, firm, ſingle ſtem, branching erectly all around near a yard high; having large pinnated, light-green leaves, of many pair of narrow lobes; and all the branches terminated by large, compound, yellow flowers, one on each peduncle, exhibiting different properties in the varieties.

*Varieties are*] Lemon-coloured, or pale yellow-flowered African.——Deep yellow-flowered.——Orange-coloured.——Sweet-ſcented.—

ſcented. —— Dwarf, &c.——All of which varieties furniſh both ſingle and double flowers; the doubles being large, full, and ſwelling, rendered ſo by different modes of impletion, ſuch as—Radiated doubles, rendered double by the impletion or multiplication of the plane florets of the radius.—Diſcous doubles, rendered full by the elongation and leſs profound diviſion of the hollow florets in the diſc—Fiſtulous, or quilled doubles, having all the florets appearing fiſtulous or hollow like a quill—Plane doubles, having all the florets plane or flat—Waved doubles, having all the florets waved—Common ſingle-flowered, having plane florets in the radius, and numerous ſmall tubular florets in the diſc. See the *Characters*, and COMPOSITUS FLOS.

All theſe varieties being ſpecies of the *Tagetes erecta*, they riſe with erect, firm ſtalks and branches, as in the ſpecific deſcription, producing numerous flowers in regular ſucceſſion, from June or July until October, ſucceeded by abundance of ſeed in autumn.

2 TAGETES *patula*.

*Spreading Mexican Tagetes, commonly called French Marigold*] Riſes with ſubdivided ſpreading ſtalks and branches, two feet high, large pinnated deep-green leaves, and at the ſides and ends of the branches numerous, moderately large, compound, radiated flowers, yellow, crimſon, and variegated, in the different varieties.

*Varieties are*] Pale yellow-flowered. —— Deep yellow-flowered —— Golden yellow-flowered— Crimſon-coloured. — Variegated crimſon and yellow, conſiſting of many beautiful variegations in different varieties.—— Striped, crimſon, and yellow.—And of each of which colours there are Single-flowered. Double-flowered — Large-flowered —Small-flowered— Sweet-ſcented, and dwarf French Marigold.—All of which riſe with ſubdivided ſtalks, of very branchy ſpreading growth, producing a great profuſion of flowers from the ſides and ends of the branches, in ſucceſſion, from June or July, until November; but the double, the variegated, and the ſtriped ſorts, are the moſt beautiful; likewiſe ſome of the variegated and ſtriped ſingles are remarkably elegant in their variegations, and richneſs of colours; all the ſorts producing great plenty of ripe ſeed in autumn.

Both theſe ſpecies of *Tagetes*, and all their numerous varieties, are herbaceous annuals, riſing from ſeed in ſpring, obtain full growth in July, flower and produce ſeed in autumn, and wholly periſh, root and top, in October or November.

They being natives of Mexico, are conſequently of ſomewhat tender quality here; but have been long reſidents of the European gardens, as ornamental flowery plants; raiſing them annually from ſeed in ſpring, generally in a hot-bed; thence planted into the full ground, &c. in May or June, where they flouriſh in great perfection, till killed by the froſt.

The flowers of both the ſpecies and reſpective varieties, are large, and very conſpicuous; but thoſe of the firſt ſpecies, *Tagetes erecta*, are much the largeſt: and in all the ſorts they are univerſally compound and radiated, each flower being compoſed of numerous ſmaller ones, all within one general calix or cup; which, in their characteriſtic, or common ſingle ſtate, the middle or diſc conſiſts of many ſmall tubular, hermaphrodite florets, and of many plane or flat tongue-ſhaped female florets forming the circumference or radius: but in their multiplied ſtate, they are rendered double by different impletions; ſometimes by the tubular florets of the diſc being enlarged, lengthened, and leſs divided at the brim; and ſometimes the impletion is effected by an encreaſe of the flat florets, in the ray or radius, multiplying inward, and fill the diſc, to the total excluſion of the tubular florets; and in ſome varieties the impletion conſiſts wholly of plane florets; in others, they become wholly fiſtular or quilled, as often obtain in ſome varieties of the firſt ſpecies *Tagetes erecta*.

The different variation of each of theſe two ſpecies, although apt to vary one to the other, that with particular care in ſaving the ſeed of each reſpective ſort, from the very fineſt full flowers and beſt colours, will remain tolerably permanent, and moſtly produce the like kind of flowers in return.

All the ſorts, conſidered as ornamental plants, are eligible furniture for decorating the borders, and other conſpicuous compartments of the pleaſure-ground; alſo to plant in pots for moving occaſionally, to adorn any particular compartment, in aſſemblage with other potted annuals: they will all grow freely in any common ſoil of a garden, and in an open expoſure; and exhibit a very conſpicuous autumnal bloom, in long ſucceſſion; and being properly diſpoſed in aſſemblage, will affect a very ornamental variety

in

in the diverſity of the various forms and colourings of the flowers, in the different varieties.

They therefore being all of the annual tribe, as we already obſerved, that being raiſed from ſeed ſowed annually in the ſpring, about March or April, in a hot-bed, or warm border, &c. as hereafter directed; they will arrive to a proper ſize for planting out towards the middle or latter end of May, or beginning of June, when the weather will have become ſettled or temperate enough to admit of their being planted any where in the full ground, finally to remain to produce flowers and ſeed.

They are all of very free growth, eſpecially after being planted out finally in the full ground, where they require but very little culture.

The firſt ſpecies in particular, and varieties, as they always grow firmly erect, both in ſtem and branches, require but very little trouble after their final tranſplantation.

But the ſecond ſort *Tagetes patula*, divides and ſpreads out wildly near the ground in a rambling manner; it requires to be trimmed up at bottom to a ſingle ſtem, and its branches alſo trimmed occaſionally, to preſerve the head ſomewhat regular, and within due bounds.

*Method of Propagation.*

As to the method of propagation, they are raiſed only from ſeed ſowed every ſpring in March or April, either in a hot-bed, to raiſe the plants to more early perfection, or in a warm border, about the middle or latter end of April, for a later bloom.

By a Hot-bed.—Towards the middle or latter end of March, or beginning of April, you may ſow ſome ſeed of each ſort in any moderate hot-bed either alone, or with other annuals of ſimilar temperament, ſuch as China aſter, common balſamine, marvel of Peru, chryſanthemum, &c. See ANNUAL PLANTS. Having therefore a hot-bed ready, and ſheltered with a frame and lights, or with hand-glaſſes, &c. or in default of either, arched over with hoops, to be covered with mats on nights, which will ſucceed tolerably, if not ſowed before the beginning of April, obſerving, in either method, the hot-bed being properly earthed at top, five or ſix inches deep; then ſow the ſeed of each ſpecies and reſpective variety ſeparate, either in ſhallow drills a quarter of an inch deep, or on the ſurface, and covered with light mould that depth; or may be ſown in pots, and plunged in the hot-bed.

They will ſoon come up, giving occaſional waterings, and admit a large portion of free air to ſtrengthen the plants as they advance; which when about from three to four or five inches high, prick a quantity of the beſt upon another moderate hot-bed four or five inches aſunder, to have about three weeks growth or more to forward them as much as poſſible: aſſiſting them with proper waterings, giving likewiſe occaſional ſhade from the ſun till rooted, and plenty of free air daily; another parcel of the ſame ſeedlings may, about the beginning or towards the middle of May, when the weather is ſettled tolerably warm, be planted out into the full ground, taking opportunity of ſhowery weather; and plant them either at once where they are to remain, or in nurſery-beds, in rows half a foot at leaſt aſunder; being careful to give water directly, repeating it occaſionally in dry weather, together with occaſional ſhade, where convenient, in ſunny days, till the plants are well rooted afreſh. And when thoſe thus pricked out both in the hot-bed, and in the nurſery beds in the open ground, have had three or four weeks growth, or till from ſix or eight to ten or twelve inches high, they may be tranſplanted with balls of earth, without hardly any check by their removal; or if permitted to ſtand till they ſhew bloom ſufficient to diſcover which are double and which ſingle-flowered, and then chuſing only the beſt ſorts accordingly, removing them with a ball of earth about their roots as aforeſaid, into the borders and pots, or other places intended, at from five at leaſt to ten feet diſtance from one another, and diſtribute the different ſorts ſo as to effect diverſity, watering them directly, and at times till freſh rooted.

Or, if intended to plant the whole immediately out from the ſeed-bed into the borders, &c. finally to remain, as often practiſed to ſave time and trouble; and that if you would cultivate only the fineſt ſorts, may plant two or three plants nearly cloſe together in patches, about the borders, the afore mentioned diſtance, or in pots, &c. and as ſoon as they ſhew their flowers large enough to judge of their properties, may clear away the worſt, and leave only one of the beſt ſorts in each patch, or pot.

Likewiſe, when intended to plant any in pots, to adorn ſore courts, &c. always the very

very beſt doubles of the fineſt colours, from among thoſe which have been previouſly pricked out in nurſery-beds, and remained to ſhew bloom, tranſplanting them with balls of earth into the pots, giving plenty of water, and place them in the ſhade till they have taken good root; then remove the pots of plants where wanted.

Raiſing them in the open ground.—In default of hot-beds, &c. may raiſe all the varieties of theſe plants in the full ground, but the ſeed muſt not be ſowed before April, and chiefly towards the middle of that month; chuſing ſome warm rich border, ſow the ſeed either in ſhallow drills near half an inch deep, or all over the ſurface, and covered thinly with earth, or raked in evenly; obſerving, that if the place is defended with any ſpare hand glaſſes, or frames and lights, or even with hoop-arches for the ſupport of mats, it will be of much advantage in affording ſhelter in cold nights; however, this ſowing often ſucceeds tolerably well without any covering, though probably not come ſo forward as thoſe that have occaſional ſhelter.

When the plants thus raiſed are from about three to five or ſix inches high, as formerly noticed in the hot-bed culture, they ſhould be planted out either finally into the the borders, or in nurſery-beds for a little time; then tranſplanted where they are to remain, as before directed.

As to future culture of all theſe plants, after being finally planted out, give occaſional waterings the firſt week or fortnight till they have taken root, as before adviſed; and after being advanced in growth, place ſome ſtakes where needful to the ſtrongeſt large-headed plants, one ſtake to each; likewiſe trim off low ſtraggling branches near the bottom, and long ramblers of the top or head juſt to preſerve a little regularity, more particularly in the *Tagetes patula*, which is apt to ramble conſiderably.

Thoſe planted in pots will require conſtant watering, three times a week at leaſt, or even every morning or evening in very dry hot weather.

*Saving Seed of all the Sorts.*

As to ſaving the ſeed of theſe plants, they ripen abundance in September; but it ſhould be collected only from the fineſt double flowers, to preſerve the reſpective varieties in as true perfection as poſſible, which, without this precaution, are apt to degenerate conſiderably; therefore gather only the prime large heads of ſeed; which, after being ſpread to dry properly, may either be beat or rubbed out, or retained in the heads; putting the whole up in bags or boxes till ſpring, for ſowing.

Always ſave freſh ſeeds every year; for thoſe more than one year old rarely grow.

TAMARINDUS.

Tamarind tree.

It is a large tree of Indian growth, adorned with fine pinnated leaves, and bunches of tripetalous flowers; and is retained here in our ſtoves for variety.

Claſs and order, *Triandria Monogynia.*

*Characters.*] CALIX, four plane, oval, acute leaves, coloured and deciduous.—COROLLA, three oval, plicated, equal, riſing, ſpreading petals, the length of the calix, with room for a fourth and loweſt petal, &c.—STAMINA, three awl-ſhaped, riſing filaments in the ſinus of the calix, arched towards the corolla, and with oval incumbent antheræ.—PISTILLUM, an oblong, pedicelated germen, awl-ſhaped riſing ſtyle, and thickiſh ſtigma.—PERICARPIUM, a long, compreſſed, unilocular pod, having a double bark, and contains generally three angular ſeeds.

There is but one ſpecies, viz.

TAMARINDUS *Indica.*

*Indian Tamarind-tree.*] Riſes with a large trunk, dividing into a very branchy ſpreading head, growing fifty or ſixty feet high, covered with a brown bark; long abruptly-pinnated leaves of ſixteen or eighteen pair of oval lobes, not terminated by an odd one; and at the axillas of the leaves looſe bunches of reddiſh flowers, ſucceeded by ſeed-pods full of an acid pulp, ſurrounding the ſeeds; but do not ripen in England.

The ſeed-pods of this tree are the tamarinds uſed in medicine, &c. being of a pulpy acid nature, excellent to quench thirſt, and allay heat; and are imported hither from the Weſt and Eaſt Indies, preſerved in ſugar.

This tree is a native of the Eaſt and Weſt-Indies, alſo of Ægypt and Arabia; and from which countries it was firſt introduced into the European gardens for variety; where it requires the conſtant protection of a ſtove all the year; ſo muſt be kept always in pots, and continued conſtantly in that department, and

managed as the other woody exotics of the ſtove collection.

It is propagated by ſeeds obtained from abroad, which ſow in ſpring, in pots of light earth, and plunged in a hot-bed or bark-bed in the Stove, &c. where they will readily come up, and when the ſeedlings are three or four inches high, prick them out in ſeparate ſmall pots, giving water and plunge them again in the hot-bed, repeating the waterings, and give occaſional ſhade from the ſun till freſh rooted: and as the plants advance in growth, ſhift them into larger pots, and keep them always in the bark-ſtove.

TAMARIX.

Tamariſk-tree.

Conſiſts of two hardy deciduous tree and ſhrub kinds, for variety in the ſhrubbery compartments, garniſhed with narrow finely-divided leaves, and numerous ſmall pentapetalous flowers in looſe ſpikes at the ends of the branches.

Claſs and order, *Pentandria Trigynia.*

*Characters.*] CALIX is obtuſe, divided into five obtuſe erect ſegments, and permanent.—COROLLA, five oval, concave, ſpreading petals.—STAMINA, five or ten capillary filaments, having roundiſh antheræ.—PISTILLUM, an acuminated germen, no ſtyle. but three oblong feathery revolute ſtigmas.—PERICARPIUM, an oblong, acuminated triquetrous, trivalved, unilocular capſule, having numerous ſmall downy ſeeds.

There are only two ſpecies, the one ſomewhat of the tree kind, the other a ſhrub, both deciduous hardy exotics, and remarkable for one producing pentandrous, and the other decandrous flowers; and both of which are very ornamental.

The ſpecies are,

TAMARIX *Gallica.*

*Gallican or French Tamariſk.*] Grows fourteen or ſixteen feet high, with ſlender ſpreading irregular branches, covered with reddiſh and brown bark, narrow finely-divided leaves, having the indentures imbricated, or lie over one another like ſcales of fiſh, and numerous ſmall, pale-red, pentandrous flowers in looſe ſpikes at the ends of the branches.

TAMARIX *Germanica.*

*German Tamariſk.*] Grows eight or ten feet high, branching erectly, covered with a yellowiſh bark, ſmall, divided, ſcaley, light-green leaves, and numerous, larger decandrous flowers in looſe ſpikes at the ends of the branches.

Both theſe ſpecies of *Tamarix* begin flowering in July, and as they are produced numerouſly towards the ends of all the branches in large looſe ſpikes, they appear very conſpicuous and ornamental; for though the flowers are ſeparately ſmall, they are very numerous, and cloſely placed in each ſpike; and which in the firſt ſpecies have each but five ſtamina, (*pentandria*), and in the ſecond ſpecies ten ſtamina, (*decandria*), each flower ſucceeded by oblong three-cornered capſules, full of downy ſeed, rarely ripening in England.

Theſe ſhrubs are proper ornaments for decorating the ſhrubbery, and all hardy deciduous plantations; as they exhibit a very conſpicuous variety, both in their beautiful foliage, and fine ſpikes of flowers.

They will ſucceed in almoſt any ſoil and ſituation; and may be had at the public nurſeries; and being in poſſeſſion of a few, may ſoon encreaſe them plenteouſly as below.

*Method of Propagation.*

They are propogated the moſt readily by cuttings; alſo occaſionally by layers; though they generally grow very freely by cuttings.

By Cuttings.—They will readily grow by cuttings of the young ſhoots; and the proper ſeaſon for planting them is almoſt any time from October till February or March, in open weather; chuſing therefore a quantity of cuttings, young ſhoots of the year, and plant them in a ſhady border, or any moiſt ground, in rows a foot aſunder, they will be well rooted by the following autumn; when, if neceſſary, they may be tranſplanted in wider rows, and in two or three years they will be ready for the ſhrubbery.

By Layers.—The young ſhoots are the proper parts to lay, and the autumn or early part of winter is the ſeaſon for laying them; which perform by ſlit-laying, and let them remain a year; then examine them, and plant off ſuch as are rooted in nurſery rows till wanted.

They may alſo be raiſed from ſeed ſowed in a moiſt border as ſoon as it can be obtained.

TAMUS.

Black Briony.

Two hardy, herbaceous, climbing perennials, compoſe this genus, ſometimes raiſed for variety in the pleaſure-ground, and for medical uſes; are volubilate climbers, riſing by

by ſupport many feet high, garniſhed with heart-ſhaped and trifid leaves, and bunches of apetalous dioecious male and female flowers of no beauty.

Claſs and order *Dioecia Hexandria.*

*Characters.*] CALIX, male and female flowers on ſeparate plants, the males having a ſix-leaved cup, and the females a monophyllous one divided into ſix parts.—COROLLA, no petals.—STAMINA, ſix ſimple filaments in the males, with erect antheræ.—PISTILLUM, in the female flowers, an oblong germen under the calix, cylindric ſtyle, having three reflexed emarginated ſtigmas.—PERICARPIUM, an oval trilocular bacca, having two globular ſeeds.

There are but two ſpecies, one an inhabitant of England, &c. among hedges and buſhes, and the other of the iſland Crete; are both large fleſhy-rooted plants, perennial in root, but with annual ſtalks.

1 TAMUS *Communis.*

*Common Black Briony.*] Hath a very large, thick, fleſhy root, covered with a blackiſh brown ſkin; ſending up long, twining, climbing ſtalks, winding round any ſupport ten or twelve feet high, heart-ſhaped, undivided, ſmooth leaves; and long bunches of white flowers from the ſides of the ſtalks, ſucceeded by oval red berries.

It grows wild under hedges, &c. in England, but is ſometimes admitted in gardens as a climber for variety; and is eſteemed of great efficacy in medicine.

2 TAMUS *Cretica.*

*Cretan Black Briony.*] Hath a large, fleſhy root, twining, climbing ſtalks, mounting by ſupport ten or twelve feet high; trifid, or three-lobed leaves, and bunches of whitiſh flowers at the ſides of the branches, ſucceeded by red berries.

Both the ſpecies flower in June and July; the flowers are ſmall, and without petals; and are ſucceeded in the female plants by berries ripening to a red colour in Auguſt; each having two ſeeds. See the *Characters.*

They are both hardy perennials that are abiding in root, producing new ſtalks annually in ſpring; will grow any where in the full ground under ſhrubs and buſhes; and a few of each ſort may be introduced in the herbaceous collection for variety and obſervation, in thickets, woods, and wilderneſs plantations, among other climbers; and may be there raiſed both from ſeed and roots, planted at once, where they are to remain near the ſhrubs and buſhes, and ſuffered to run and climb over their branches, and any adjacent ſupport.

Some may alſo be cultivated in any bye place for medical uſe, particularly the firſt ſort, as being the moſt common and the moſt eaſily obtained, either the ſeed to ſow, or roots to plant, as below.

Both the ſpecies are eaſily propagated by ſeed, and by parting the roots.

By Seed.—The berries ripen in autumn, which ſhould be ſown ſoon after, that they may more certainly grow the firſt ſpring. Sowing ſome at once where they are to remain in patches between ſhrubs, &c. four or five ſeeds in a place half an inch deep; others may be ſowed in beds, either to remain, or for tranſplantation.

By parting the Roots.—The old roots often furniſh off-ſets, which ſhould be ſlipped off early in autumn or ſpring, and planted at once where they are to remain.

TAN, or TANNER'S BARK, for making hot-beds, called bark-beds.

Tanner's Bark, commonly called ſimply Tan or Bark, is the Bark of the oak-tree, peeled therefrom when felled in the woods for timber, of which there are generally great falls made every ſpring, when all the bark is detached for the tanner's uſe in tanning of leather, being previouſly chopped or ground to pieces: and after being uſed for that purpoſe, and caſt out of the tan-vats, becomes a valuable material in gardening, for making thoſe kind of hot-beds commonly called bark-beds, which are conſiderably the moſt effectual hot-beds in uſe, for the culture of moſt kinds of tender exotics, that require aid of artificial heat in this climate all the year in ſtoves, &c. being generally made in an oblong pit or cavity ſix or eight feet wide, and three deep, the length at pleaſure, (ſee BARK-BED and STOVE); and the hot-bed being, in ſubſtance, the ſame width and depth, it produces a very ſubſtantial, tho' moderate, uniform, and durable heat, not ſo apt as dung hot-beds to heat vehemently, and endanger burning the plants, nor ſend up a noxious ſteam; and the heat is of three times longer duration, and more eaſily managed; for a Bark hot-bed will ſupport its heat near a year, with the aſſiſtance of a little freſh Bark added every three or four

months, forking up the old and new together each time. See BARK-BED and STOVE, &c.

Therefore this valuable material Tan or Bark for the purpoſe of making hot-beds, is the caſt-off Tan of the tan-yards; which, however, they preſerve in ſtore with the utmoſt care for ſale to the gardeners, who now, ſince ſtoves have become ſo common almoſt every where, fetch it far and near, which is ſold at per buſhel, or cart, or waggon-load; but generally about London is ſold at ſeven and ſix pence per load of ſixty buſhels, being careful to have that which is as freſh out of the tan-vats as poſſible, and that of proper quality, for there are different ſorts, ſome being chopped or ground moderately large, ſome middling, and ſome cut very ſmall, to make it go the farther for particular purpoſes of tanning, though not near ſo proper for the gardener's purpoſe as the middling or larger ſort; but the largeſt of all heats the moſt violently, the middling more moderate and durable, and the ſmall ſort ſoon becomes earthy, and declines its heat; ſo that the middling Tan is preferable for general uſe: however, as there is now ſuch an univerſal demand for this article, the deſired ſort is not always to be readily obtained; therefore we are often obliged to put up with a mixture of all ſorts.

But for the particulars reſpecting the choice and preparation of the Tan or Bark, and method of forming it into a hot-bed, and management thereof, ſee BARK-BED, BARK-PIT, FORCING-FRAME, and STOVE.

## TANACETUM.

Tanſey.

This genus compriſes herbaceous and ſhrubby perennials for the kitchen-garden, pleaſure-ground, and green-houſe collections, all of upright growth, from two or three to eight or ten feet high, garniſhed with bipinnated, pinnated, and entire leaves, in the different ſpecies; and the branches terminated by numerous compound flowers, in umbellate and corymboſe bunches.

Claſs and order, *Syngeneſia Polygamia Superflua.*

*Characters.*] CALIX, a compound flower, having a hemiſpherical, imbricated general cup.—COROLLA, numerous tubular, quinquedented, hermaphrodite florets in the diſc, and trifid female florets in the radius.—STAMINA, five ſhort capillary filaments, with cylindric antheræ, in the hermaphrodite florets.—PISTILLUM, an oblong germen, ſlender ſtyle, having in the hermaphrodites a bifid revolute ſtigma, and two reflexed ſtigmas in the females.—PERICARPIUM, none; a ſingle ſeed in each floret, placed on the convex naked receptacle.

There are about eight ſpecies of *Tanacetum*, though not above five or ſix eſteemed for culture in our gardens; three of which are hardy, herbaceous perennials for the full ground, and three are of ſhrubby growth for the green-houſe.

*Hardy herbaceous kinds.*

Under this head is compriſed the common Tanſey with varieties, Coſtmary or Alecoaſt, and Siberian Tanſey; all hardy, fibrous-rooted perennials, abiding in root, but with ſtalks riſing every ſpring and decaying in autumn.

1 TANACETUM *Vulgare.*

*Common Garden Tanſey.*] Hath a fibrous, tough, creeping root; upright channelled ſtalks, branching erectly two or three feet high; large, bipinnated, cut, ſerrated leaves, of a ſtrong agreeable odour; and all the ſtalks and branches crowned with umbels of yellow flowers in July and Auguſt.

*Varieties.*] Common plane-leaved Tanſey. — Curled-leaved. — Variegated-leaved. — Scentleſs Tanſey.

The common ſort grows wild in England, &c. by road ſides, and on the borders of fields, and ſides of banks, &c. but which, and its varieties, have been long employed in our gardens, both as culinary and medical herbs; and ſometimes as ornamental plants: but for the latter purpoſe the curled-leaved, and variegated ſorts merit the moſt reſpect; the curled ſort in particular having very large thick leaves, moſt beautifully curled, appearing double as it were, and is of a heightened grateful fragrance; which therefore, together with the variegated ſort, demand a place in every ornamental collection, where they will exhibit a very conſpicuous diverſity.

However this herb, for its œconomical uſes in the kitchen and medicine, merits culture in every garden, the leaves being ſometimes uſed in ſallads while young and tender in the ſpring, and for making Tanſey-cakes, puddings, &c. and the leaves, ſeeds, and flowers, are ſaid to be a certain remedy to deſtroy worms in the human body.

This herb, therefore, merits culture in every kitchen-garden, planting ſlips of the

root

root in beds, in rows a foot aſunder, where it will abide many years.

2 TANACETUM *Balſamita.*

*Balſamita Major, commonly called Coſtmary or Alecoaſt.*] Hath a thick, fibrated, fleſhy, creeping root; upright, round, branchy ſtalks, a yard high; oval, entire, ſerrated leaves; and the ſtalks and branches terminated by corymboſe bunches of deep-yellow flowers in Auguſt.

It is an odoriferous plant, formerly in much eſteem both as a culinary and medical herb, and as ſuch is ſtill cultivated in ſome kitchen gardens, planted as the common Tanſey.

3 TANACETUM *Siberica.*

*Siberian Tanſey.*] Hath a thick, fibrous, creeping root; upright, branchy ſtalks, two feet high; pinnated leaves, having very narrow foliola or pinna, ending in two or three points; and at the axillas and termination of the ſtalks, ſmooth, corymboſe bunches of yellow flowers, in June and July.

All theſe herbaceous kinds are durable in root, but annual in leaf and ſtalk.

*Tender ſhrubby kinds for the green-houſe.*

Conſiſts of three ſhrubby ſpecies, moſtly evergreens, originally from Æthiopia in Africa, and require the ſhelter of a green-houſe here in winter: they riſe with ſhrubby ſtems and branches from three or four to eight or ten feet high; ornamented with pinnated and pinnatifid leaves, and bunches of yellow, compound flowers at the end of the branches.

4 TANACETUM *Suffruticoſum.*

*Under-ſhrubby Æthiopian Tanſey.*] Riſes with under ſhrubby branching ſtems, three or four feet high, pinnated multifid leaves, of many very narrow lobes, ſub-divided into acute parts, and roundiſh bunches of bright yellow flowers at the ends of the branches.

5 TANACETUM *fruteſcens,*

*Shrubby African Tanſey.*] Riſes with a woody firm ſtem, branching ſix or eight feet high; pinnatifid leaves, with ſpear-ſhaped obtuſe entire ſegments or lobes; and roundiſh bunches of ſulphur-coloured flowers at the ends of the branches.

6 TANACETUM *Crithmifolium.*

*Samphire-leaved Shrubby Tanſey.*] Riſes with a ſhrubby ſtem, branching five or ſix feet high; pinnated leaves, with very narrow entire lobes, remote from one another, and corymboſe bunches of yellow flowers at the ends of the branches.

All theſe ſix ſpecies of *Tanacetum*, both herbaceous and ſhrubby kinds, flower very abundantly every ſummer, though not all eſteemed ornamental; but the ſhrubby kinds in particular moſt of all: the flowers of all the ſorts are ſeparately ſmalliſh, but being collected into numerous large umbellate and corymboſe bunches at the top of the ſtalks and branches, appear very conſpicuous; and being compound, each ſeparate flower is compoſed of many ſmaller ones, all within one general cup, (ſee the *Characters*); and are ſucceeded by plenty of ripe ſeed in autumn, more eſpecially the herbaceous kinds.

The three herbaceous Tanacetums are very hardy fibrous-rooted perennials, that proſper in almoſt any ſoil and ſituation, and are of great duration in root, which alſo creeps and ſpreads very conſiderably; by which the plants, propagated abundantly, and encreaſing into large bunches, require trimming or cutting in all round occaſionally, to keep them within moderate bounds, eſpecially the common Tanſey, and varieties. The two firſt ſpecies in particular, are the moſt common in England, and are cultivated in kitchen-gardens as culinary herbs; but more commonly the *Tanacetum Vulgare*; planting ſlips of the root of each ſort in autumn or ſpring, in rows a foot aſunder. They may alſo be all employed to diverſify the compartments of the pleaſure-ground, among other large herbaceous perennials.

And as to culture of theſe herbaceous kinds, it conſiſts principally of cutting down the decayed ſtalks annually in autumn; and as the roots encreaſe faſt into large bunches, ſpreading widely round, they require trimming in, or to be ſlipped occaſionally, which otherwiſe are apt to over-run the ground; keeping them clean from weeds, and dig between the plants annually, in common with other ſuch-like perennials.

The three ſhrubby *Tanacetums* being exotics from hot countries in Africa, are ſomewhat tender here, but they only require ſhelter from froſt; ſo muſt be always kept in pots, and depoſited among the green-houſe plants, and treated like other ſhrubby exotics of that collection; in which they will effect a very agreeable variety at all times of the year, but more particularly all ſummer

and

and autumn, when in flower. They generally begin flowering the early part of ſummer, and continue moſtly till the end of autumn; but are rarely ſucceeded by good ripe ſeeds in England.

*Propagation of all the ſorts.*

*Herbaceous kinds.* —— All the herbaceous ſpecies are propagated plentifully by parting the roots; alſo by ſeed.

By parting the Roots.—All theſe ſorts multiply exceedingly by the root, which is the moſt expeditious and ready method of propagating them; which is performed by ſlipping or dividing the roots into ſlips, in autumn or winter, when the ſtalks are decayed; or early in ſpring, before new ſtalks ſhoot forth, planting the ſlips at once where they are to remain: thoſe for the kitchen-garden, ſuch as the common Tanſey, &c. plant in any bed or border a foot and a half aſunder; and thoſe intended for variety in the pleaſure-ground, diſpoſe ſingly here and there, at eligible diſtances, to effect a proper diverſity.

By Seed.—Plenty of ſeed may be ſaved in autumn, which being ſowed in ſpring following, in beds of light earth, broad-caſt and raked in, they will ſoon come up, and in July the plants will be fit to prick out in beds, in rows a foot aſunder; ſome to remain, and others to be tranſplanted in autumn, where required.

*Shrubby kinds.* —— All the three ſhrubby ſorts are all eaſily propagated by cuttings of the branches.

The cuttings may be planted any time in ſpring and ſummer, chuſing the young and moſt robuſt ſhoots, which cut off in proportionable lengths; and if early in ſpring, &c. may plant them in pots of good earth, ſeveral in each, and plunge them in a hot-bed, where they will be rooted, and fit for potting off ſeparately in ſix weeks; or, if in ſummer, the young ſhoots may be planted in the full ground, in a ſhady border, or where they may be ſhaded with mats from the ſun; or planted in pots, and placed in the ſhade, or rather under a garden frame, &c. and ſhaded occaſionally; in all of which methods giving plenty of water, they will readily take root; but thoſe in the hot-bed will be forwardeſt: they however, will all be well rooted the ſame ſeaſon, and ſhould then be tranſplanted in ſeparate pots, then managed as other ſhrubby green-houſe plants. See GREEN-HOUSE PLANTS.

TARCHONANTHUS.

Shrubby African Flea-bane.

It is a ſhrubby ever-green exotic of Æthiopia, for the green-houſe collection; adorned with oval leaves, and compound flowers.

Claſs and order, *Syngeneſia Polygamia Æqualis.*

*Characters.*] CALIX, a compound flower, having a monophyllous, top-ſhaped, ſeptemfid, coloured, permanent cup. — COROLLA, the compound flower is uniform, of many funnel-ſhaped, quinquedented, hermaphrodite florets.—STAMINA, five ſhort filaments, with cylindric antheræ longer than the corolla.—PISTILLUM, an oblong germen, a ſtyle double the length of the flower, and two gaping ſtigmas.—PERICARPIUM, none; a ſingle ſeed in each floret, covered with down, ripening in the permanent calix.

There is but one ſpecies, viz.

TARCHONANTHUS *Camphoratus.*] Riſes with an upright woody ſtem, branching out towards the top, ten or twelve feet high; oblong, oval, downy leaves, white underneath; and purple-violet flowers, in ſpikes at the ends of the branches.

It begins flowering about September, and continues a ſucceſſion of flowers ſeveral months, but does not ripen ſeeds in England.

It is an ever-green exotic from Africa, but has been long introduced into our gardens for variety as a green-houſe plant, as it requires ſhelter in winter; muſt therefore be always cultivated in pots, and managed as other ſhrubby exotics of this collection. See GREEN-HOUSE PLANTS.

The propagation of this plant is eaſily effected by cuttings planted in ſpring or early part of ſummer, in pots, and plunged in a hot-bed, giving occaſional ſhade and water; they will ſoon emit roots the ſame year, and be fit to pot off ſeparately in two or three months. Or cuttings planted in May and June, in beds of common earth, or in pots, and ſhaded with mats or oiled paper ſhelters, or covered with hand-glaſſes, and ſhaded and watered; they will alſo ſtrike root tolerably: obſerving in either caſe, that when tolerably rooted towards autumn, they ſhould be potted off ſeparately, and managed as the other green-houſe plants.

TAXUS.

## TAXUS.

Yew-tree.

It is a famous hardy ever-green tree, of ſtately ſpreading growth; a native of England, and moſt parts of Europe; and an old inhabitant of moſt European gardens, both for ornamental and uſeful hedge-work, and detached trained figures; and is alſo proper for ornamental and timber plantations, in its natural growth; but has been more univerſally cultivated for hedges, and various detached formal devices; as it branches out numerouſly and cloſe to the very bottom, having all the branches very cloſely garniſhed with ſmall, narrow, ever-green leaves, as to render it remarkably well adapted for training into any ſort of hedges, and various kinds of fancy figures, both in cloſe hedge-work, and detached. Hence this tree was univerſally cultivated in great abundance for theſe purpoſes in ancient gardening.——See HEDGES, PLEASURE-GROUND, &c.

Claſs and order, *Dioecia Monadelphia.*

*Characters.*] CALIX, male and female flowers apart, on ſeparate trees, having no calix; but a germ or bud, like a four-leaved cup. —COROLLA, no petals.—STAMINA, numerous filaments in the males, coaleſce in a column below, crowned with peltated depreſſed antheræ, having obtuſe octofid margins, and open on each ſide the baſe, diſcharging the farina or pollen.—PISTILLUM, in the females, an oval, acuminated germen, no ſtyle, but an acute ſtigma.—PERICARPIUM, a red juicy waſting berry, ſucceeds the female flowers, lengthened below, and globular at top, covered by a proper coat below; and includes one oval ſeed, prominent beyond the berry.

There are two ſpecies, but not more than one common in Europe; the other being a native of Japan, is little known in theſe parts.

The common ſort therefore is,

TAXUS *baccata.*

*Common Berry-bearing Yew-tree.*] Riſes with an upright trunk, and very branchy ſpreading head, thirty or forty feet high or more, very cloſely garniſhed with ſmall, narrow, ſtiff, dark-green leaves, growing near together, and very ſmall, apetalous, yellowiſh flowers, male and female, on different trees; in cluſters, at the ſides of the branches, ſucceeded by ſmall, red, pulpy juicy berries, containing the ſeed, ripe in autumn.

*Varieties.*] With very ſhort leaves—Broad ſhining-leaved —— Striped, or variegated-leaved.

The Yew, in all its varieties, is of the dioecious claſs, bearing male and female flowers, moſtly on ſeparate trees; flowering generally in March, but makes an inconſiderable appearance, and are ſucceeded in the females by great plenty of ripe berries, ſerving as food for birds, and to ſow for the work of propagation; as by the berries or ſeed only the tree is generally raiſed, effected in great abundance in a bed of common earth, as directed under the article of their *Propagation.*

This tree, and varieties, are very hardy ever-greens, whoſe verdure aſſumes a dark melancholy hue, of a malignant nature: are all hardy enough to proſper in any common ſoil, even often in the moſt barren, cold ſituations, as may be obſerved in many parts of England, where the tree grows naturally, arriving to a large ſize, fit to fell for timber; which being of a very hard durable nature, is valuable for many uſeful purpoſes: and it is by ſome affirmed, that bedſteads made of Yew, will not be approached by bugs.

But in reſpect, however, to its merit in gardening, it may be employed various ways as an ornamental ever-green; alſo as a foreſt tree, both for ornament and uſe, as before obſerved. Formerly it was greatly employed for hedges; and detached trained figures, in various ornamental forms, in pleaſure-grounds; but now ſeldom uſed in England for theſe purpoſes, ſince all formal works of that nature are moſtly baniſhed our gardens, and inſtead thereof it is employed in its natural ſtate, in ſhrubberies, and other ornamental plantations, principally of the ever-green tribe; being there permitted to aſſume its natural growth, in common with other rural trees and ſhrubs; ſometimes alſo planted as detached ſtandards, in extenſive diſtant opens of graſs ground, in parks and ſides of hills, &c. for variety, and ſuffered to grow in the order of nature; likewiſe is very proper to be introduced as a foreſt tree in all timber plantations, of the ever-green kind particularly, (ſee FOREST-TREES and PLANTATIONS); and for hedge-work,

where

where any internal hedges are required either for ornament or ſhelter, no tree is better calculated, or ſo proper in many caſes, it forming the cloſeſt, even, moderate-growing hedge of any tree of the ever-green collection. It is alſo peculiarly calculated for training into any formal or fancy figure, both in hedge-work, and as detached objects, ſuch as arcades, niches, bowers, pavilions, porticos, alcoves, pedeſtals, obeliſks, pyramids, pilaſters, galleries, and various other architectural devices, as well as the figures of men, beaſts, and birds, as in ancient gardening before noticed; for, by reaſon of its branches and leaves growing exceedingly cloſe, and ſhooting very moderate and regular, they may be readily trained, by clipping, into any form: and as a hedge for ſhelter in nurſery-grounds, &c. to defend the more tender or delicate young plants, no other but a Yew hedge is ſo well adapted. But as an outward hedge for a fence, it is not ſo well calculated as a holly or hawthorn hedge. See HEDGES.

For all of the above purpoſes may this noted tree be moſt eaſily trained, if proceeded with in its minor growth in the nurſery; that if for hedges or any fancy figures, ſuffer the plants to branch away immediately from the very bottom, and trim them with garden ſhears once or twice every ſummer, to form them for the purpoſes intended; and if deſigned for the ſhrubbery and other rural plantations, trim them up a little at bottom to a ſingle ſtem, and ſuffer the head to branch out on all ſides and top diffuſively; likewiſe, if for larger detached ſtandards, trim up the ſtems gradually to elevate them in proportion, and encourage the head to branch out, and diffuſe its branches widely around according to nature.

Yew hedges, and detached fancy figures, were in ſo great repute formerly, when nothing but uniform, regular deſigns in gardening prevailed, that, in pleaſure-grounds particularly, all the diviſions or quarters were ſurrounded with theſe ſort of hedges, &c. ſo as in a manner to ſhut out all other trees, ſhrubs, and flowers, from the ſight of perſons in the adjacent walks; which would otherwiſe have afforded an entertaining variety; and inſtead thereof nothing hardly but Yew hedges were to be ſeen on every ſide: hence many perſons of taſte, conſidering ſuch gardens deſtitute of variety and entertainment, rooted out the hedges by degrees, and laid out the gardens anew in more open rural deſigns, in imitation of nature, exhibiting all the various plants to open view, from the contiguous walks and lawns. So that in conformity to the prevailing rural taſte, in plans or deſigns in gardening, hardly any Yew hedges are admitted by way of ornament, or otherwiſe; or even ſo much as a ſingle detached Yew, trained in any uniform manner. However, ſometimes, in extenſive grounds, Yew hedges, and other formal Yew figures, were ſo judiciouſly arranged, and artfully trained, as to exhibit an air of ornamental grandeur at firſt entrance, eſpecially where they were not too prevalent. Therefore, in pleaſure-gardens of any conſiderable extent, ſome ornamental Yew hedge work, &c. might be admitted in ſome particular open diſtricts, for variety, in contraſt with the rural deſigns; though it ſhould be introduced with great moderation and caution, ſometimes forming the entrance to ſome elegant compartment; and ſometimes the termination or boundary of others, where they may not obſtruct the proſpect, or ſhut out from ſight the view of any deſireable object within the garden; training them, by clipping with garden-ſhears once or twice every ſummer, ſome parts ſtraight, others formed into arches, niches, pilaſters, porticos, and other figures, before noticed. See HEDGES.

Likewiſe, detached Yews for training into various fancy figures, might be thinly diſtributed here and there, and formed by clipping every ſummer into various forms and dimenſions before mentioned, to cauſe variety: for all of which purpoſes, both for formal and rural plantations, young Yew plants may be procured at all the public nurſery-grounds at a moderate rate; or may be eaſily raiſed in great abundance, as hereafter directed.

But ſome perſons reject the Yew, on account of the gloomy mournful aſpect of its verdure, and poiſonous quality; others again admire it for its ſolemn appearance, which effects a remarkably good contraſt with the other more lively evergreens; and as to its baneful effects, it is certain the leaves are of a poiſonous nature, as the name *Taxus*, derived from the Greek, imports; and it is ſaid was formerly uſed in compounding poiſons. Hence

ſome

ſome authors have diſtinguiſhed this tree by the name of TAXUS *lethifera*, the *death-bringing Yew*; and hereby, ſay they, it is looked on as a ſymbol of mortality, and for that reaſon planted in church-yards to remind people of their approaching fate.—It is certain that many accidents have happened to cattle, both horſes and cows, by eating the leaves of Yew, eſpecially the clippings of Yew hedges, which, when they have lain in the ſun a day or two, and half dried, ſome cattle, particularly cows, will ſometimes eat them very greedily; ſo that every one ought to be remarkably careful either to burn the clippings of theſe trees, or put them quite out of the way of cattle, and not careleſly caſt them over the wall or hedge, into lanes, highways, or on rubbiſh heaps, where cattle frequently come.

Young plantable Yews for all the fore mentioned purpoſes, may be procured at moſt of the public nurſery-grounds, at a moderate rate; or may eaſily raiſe them abundantly from ſeed, of a competent ſize, in a few years, for final tranſplantation; i. e. from two or three to five or ſix feet high; though this tree may be removed occaſionally at ſeven or eight feet height, if required, to form an immediate high hedge, &c. for the root being remarkably fibrous, the earth adheres cloſe in a lump, ſo as to admit of removing large plants readily with a ball, to the places allotted them; ſupplying them with due waterings.

*Method of Propagation, &c.*

The propagation of this tree is effected principally by ſeed, which ripen plenteouſly in autumn, and may be ſowed in any bed or border in the open ground, either as ſoon as ripe, or in ſpring. It may alſo be propagated by layers, and cuttings.

By Seed.—It is moſt adviſeable to raiſe the principal ſupply from ſeed; which if ſowed in autumn it will expedite the germenation ſo far, as ſome part will riſe the ſpring following; but if not ſowed till ſpring, they generally all remain in the ground till the ſecond year before they come up, though if the ſeeds or berries are preſerved in earth or ſand till ſpring, then ſowed, they will all riſe together the ſpring after, more plentiful and regular than the autumn ſowings: however, every one may ſuit their own convenience or inclination, in the time of ſowing; and having therefore procured a due quantity of the Yew berries, diveſted of the pulp or mucilage ſow them in beds of light earth, either in ſhallow drills, or ſcattered over the ſurface of the bed, and covered near an inch deep with light mould, out of the alleys, or elſewhere. Being thus ſowed, no farther care is required but keeping the beds clean from weeds, both before and after the plants come up; giving alſo occaſional waterings in dry weather, in ſpring and ſummer, which will forward and ſtrengthen the ſeedlings in their growth: continuing this care of occaſional watering and weeding, let the ſeedlings have two years growth in the ſeed-bed; then in autumn or ſpring prepare ſome ground into four-feet-wide beds, and here plant them out in nurſery rows, a foot aſunder, to remain two, three, or four years; when ſome may either be planted out finally for hedges, if required; others in the nurſery quarter, in rows, two or three feet aſunder, and there trained for the purpoſes they are intended, according to the hints before given.

After growing in the nurſery till they obtain from half a yard to four or five feet ſtature, they may be finally tranſplanted in autumn or ſpring, for their intended purpoſes; they will riſe with a large ſpread of roots, and ſometimes with good balls of earth; and ſhould be planted in their allotted places, as ſoon after removal as poſſible, giving each plant a good watering.

As to future culture, thoſe to be trained in hedges, or for any formal detached figure, muſt be clipped or ſhorn annually, once or twice in the ſummer, (ſee HEDGES); and thoſe in ſhrubberies, and other rural plantations, require only ſome of the lower branches trimmed occaſionally up to a ſingle ſtem; but permit the head generally to ſpread agreeably to its natural mode of growth, except juſt reducing any conſiderable rambling branch, &c.

Remark, as to the ſtriped or variegated Yews and other varieties, that continue them exactly the ſame, the propagation of them ſhould generally be effected by layers, or cuttings, as they are rarely permanent by ſeedlings.

By Layers.—Young ſhoots, not more than a year or two old, being laid in ſpring, ſummer, or early in autumn, many of them will root, and in one or two years be fit for planting off into nurſery lines.

By Cutting, or Slips.—In March or April, or end of Auguſt, or early in September, ſlip off a quantity of the one year's ſhoots, diveſt them of the lower leaves, and plant them in a ſhady border thick together, in ſmall trenches, giving water at planting and afterwards occaſionally, in dry hot weather; they will be well rooted in two years, fit for tranſplantation into wider nurſery rows.

TERRACE, (from *Terra* the Earth.)

A Terrace-walk.

In gardening, a Terrace is a raiſed bank of earth, &c. regularly formed in an oblong manner to any length, broad enough to admit of a ſpacious level walk at top, and elevated ſomewhat conſiderably above the level of the general ſurface; having the ſides uniformly ſloped, and laid with graſs, and the top formed into a flat or level, ſufficiently broad for a graſs or gravel walk, of proportionable width, as hereafter noticed; deſigned in gardens as a high, airy walk, to command a better proſpect of the adjacent places around, both within and without ſide of the garden occaſionally, as well as to enjoy the freſh air in ſummer more freely; and likewiſe a noble Terrace appears very ornamental in the pleaſure-ground.

As to the neceſſary elevation or height of a Terrace-walk, it may be more or leſs as the ſituation admits, or requires, from one foot high to one or two yards; or even three or four yards or more in particular ſituations, and where there are plenty of ſtuff, either acquired or natural, for its formation; allowing breadth in proportion, from five to thirty or forty feet, and extended to any length required, or as may be convenient: for Terraces are ſometimes formed on ſome naturally high, riſing ground, to ſave as much trouble as poſſible, in bringing ſtuff from a diſtance; and is ſometimes raiſed wholly of forced materials.

As to the proper ſituation in a garden for a Terrace, this may be varied as the natural ſituation of the place may require; though in ancient gardening Terraces were more common than at preſent; ſome deſigned both for ornament and grand elevated walks, as being conſiderably raiſed with noble ſloping banks, having ſpacious walks at top for occaſional walking; others being intended only as a moderately-raiſed walk, ſometimes extending in a line from the front of the manſion, or conducted round ſome grand open diviſion, &c.

Sometimes, however, a grand Terrace-walk is formed next the houſe, ranging either parallel to the front, or to one or both wings; or extended in a perpendicular line outward from the front of the main houſe to ſome conſiderable diſtance; and ſometimes are continued both ways; the latter generally much leſs elevated than the former.

Sometimes alſo a Terrace-walk is carried round the boundary of a lawn, or other open diviſion; others, ſometimes contrived at the outer verge of the ground, or at the termination of ſome particular compartment.

Sometimes alſo a moderately elevated Terrace is carried almoſt all round the outward boundary of the pleaſure-ground, to command a more advantageous proſpect of the open country.

In reſpect to form, a Terrace is always broader at the baſe than the top, and extended lengthways to any diſtance required; having the ſides regularly ſloped, of more or leſs acclivity, as the width, height, and ſituation admit or require. Sometimes both ſides are ſloped, and ſometimes only one ſide is ſloped, the other perpendicular, and faced with a ſubſtantial wall, &c. or by being formed againſt the ſide of a hill, or ſome naturally riſing ground; in either caſe is finiſhed always broad enough at top to admit of a proper walk; likewiſe, in ſome naturally-elevated ſituations in particular, Terraces are ſometimes formed one above another in two or more ranges, each having its ſeparate ſide ſlopes, and elevated walk; in all of which the ſlopes are neatly laid with graſs, and the walk at top is occaſionally of graſs or gravel.

The aſcent of entrance to a Terrace-walk, is ſometimes formed by an eaſy acclivity of a graſs or gravelled ſlope; and ſometimes by a grand flight of ſtone ſteps.

Where a naturally-riſing ground, of ſome conſiderable elevation, occurs in a proper ſituation, or on the ſide of a hill, it is an eligible opportunity for forming a grand Terrace with the leaſt expence and trouble, by not requiring the addition of ſo much foreign aſſiſtance in bringing earth and rubbiſh, as when raiſed entirely on a perfect level, wholly of forced earth, brought from another place for that purpoſe; or where there are any excavation of ground intended to form ha-has, pieces of water, &c. the excavated ſtuff might

might be employed in forming a Terrace, &c. where required.

In proceeding to form a garden Terrace, the baſe muſt be ſtaked out wider than the intended width at top, for the walk, in order to admti of the aſcent of ſlopes being moderate.

And in its formation, all the forced earth and rubbiſh muſt be well rammed from time to time as it is applied, in order to render the whole equally firm, that it may not ſettle out of form after being finiſhed; the ſlopes of which may either be laid with turf, or ſowed with graſs-ſeed.—See GRASS.

TETRAGONIA, *Tetragonia.*

Comprehends ſhrubby and herbaceous ſucculent perennials of Africa, for the greenhouſe collection; conſiſting of two ſpecies only, both of ſomewhat decumbent growth, with ſucculent ſtalks, garniſhed with ſmall, narrow, ſucculent leaves, and apetalous flowers at the ſides of the branches.

Claſs and order, *Icoſandria Pentagynia.*

*Characters.*] CALIX, four oval, plane, deflexed, coloured, permanent leaves.—COROLLA, no petals.—STAMINA, about twenty capillary filaments, ſhorter than the calix, having oblong, incumbent anthera.—PISTILLUM, a roundiſh, quadrangular germen, under the calix, four awl-ſhaped, recurved ſtyles longer than the ſtamina, crowned with long hoary ſtigmas.—PERICARPIUM, a large leathery, tetragonous, cruſtaceous capſule, with four longitudinal, narrow wings, or borders; and contain one quadrilocular hard ſeed, or nut, with oblong kernels.

The ſpecies are,

1 TETRAGONIA *fruticoſa.*

*Shrubby Tetragonia.*] Hath ſlender, ligneous, ſucculent, grey ſtalks, branching numerous, and ſtragglingly, four or five feet long, inclining to the ground, unleſs ſupported, and full of cryſtaline drops; very narrow, ſmall, fleſhy leaves, in cluſters, beſpangled alſo with pellucid glittering pimples, and greeniſh and yellow flowers, by two or three together, along the ſides of the branches, in July and Auguſt, ſucceeded by large tetragonous capſules, ripening ſeeds in winter.

2 TETRAGONIA *Herbacea.*

*Herbaceous Tetragonia.*] Hath a remarkably thick, fleſhy root; herbaceous, weak, trailing ſtalks, garniſhed with ſmall, oval, plane, ſucculent leaves, and bright yellow flowers, along the ſides of the branches, in February or March; ſometimes ſucceeded by ripe ſeeds in England.

Both theſe ſpecies of *Tetragonia* being exotics from Æthiopia, require ſhelter here in winter; ſo muſt be always retained in pots, and placed among the green-houſe plants, and managed like other ſucculents of that collection; but ſhould be always placed in the moſt airy part of the green-houſe in winter; as they only want protection from froſt, either in that conſervatory, a glaſs-caſe, or garden-frame; and ſhould be but very moderately watered during that ſeaſon.

They are both of procumbent growth, and unleſs ſupported, trail on the ground. The ſhrubby ſort is durable in root, ſtem, and branch, garniſhed with leaves all the year; but the herbaceous kind often die down to the ground, wholly or in part, towards autumn, and ſend up new ſtalks again about the latter end of the ſame ſeaſon, continuing in leaf all winter, &c.

Both the ſorts are retained in moſt of our eminent green-houſes, to encreaſe the variety; and as there is a ſingularity in their general port or habit, particularly the *Tetragonia fruticoſa*, they merit admittance in every curious collection.

They are eaſily propagated by cuttings, and by ſeed.

By Cuttings.—Cuttings of the young branches may be cut off any time in ſummer for planting, which, as being ſucculent, after having lain a few days to dry up the moiſture of the cut parts, may be planted either in pots, and placed under a garden-frame, and occaſionally ſhaded, or plunged in any hot-bed to forward them. Or cuttings planted in a bed of light good earth, in the full ground, will alſo readily take root, allowing ſhade from the ſun at firſt, and occaſional waterings: they will be rooted in ſix weeks, or two months, fit for potting off ſeparately, planting each in a ſmall pot at firſt, and ſhift them into larger as they ſhall require.

By Seed.—Sow it in the ſpring in pots, and plunge them in any moderate hot-bed, which will generally bring up the plants the ſame year, which otherwiſe are apt to remain in the ground till the ſecond ſpring, before they appear. When they, however, come up, inure them by degrees to the full air; and when two or three inches high, prick them ſeparately in ſmall pots, placed in the ſhade all ſummer, and moderately watered

tered and managed as other green-houſe ſucculents.

TEUCRIUM, Tree Germander, including alſo *Polium* and *Marum*, &c.

This genus is compoſed of under-ſhrubby and herbaceous plants, for variety in the pleaſure-ground, green-houſe, and for medicinal uſe, all of very moderate growth, ſome upright, others with trailing ſtalks, garniſhed moſtly with ſmall, ſimple foliage, and ſmall, monopetalous, ringent flowers, in verticillate cluſters, and ſpikes at the ſides and ends of the branches, in the different ſpecies.

Claſs and order, *Didynamia Gymnoſpermia*.

*Characters.*] CALIX is monophyllous, cut half way into five acute nearly equal ſegments, and is perſiſtent.—COROLLA is monopetalous, ringent, with a ſhort cylindric tube, incurved at the top, and with the upper lip erect, and deeply cut into two parts; the lower one into three, with the middle ſegment largeſt.—STAMINA, two long and two ſhort awl-ſhaped filaments, longer than the upper lip, and prominent between the ſegments, crowned with ſmall anthera.—PISTILLUM, a four-parted germen, a filiformer ſtyle, and two ſlender ſtigmas.—PERICARPIUM, none; the four roundiſh ſeeds lodge in the calix.

To this genus is added the *Polium*, and *Marum*, and ſome other genera, each formerly conſidered as a diſtinct genus, but now arranged as ſpecies only of this genus *Teucrium*, which comprehends above thirty different ſpecies; though ſcarcely a quarter of that number common to our gardens, or that have any great merit for general culture, either for uſe or ornament; conſiſting of hardy, ſhrubby, and herbaceous perennials, for variety and ornament in the full ground; and ſome tender kinds for the green-houſe collection.

*Hardy ſhrubby kind.*

Conſiſts of one ſmall, ſhrubby plant, hardy enough to live in the full ground in a warm, dry ſituation.

1 TEUCRIUM *flavum.*

*Yellow ſhrubby Teucrium, commonly called Tree Germander*] Riſes with erect ſhrubby ſtalks and branches, only a foot and a half or two feet high; having ſmall heart-ſhaped, obtuſely-ſerrated, foot-ſtalked leaves, hoary underneath, with the floral leaves concave and entire; and numerous flowers by threes, in whirls, along the upper part of the branches, of different colours in the varieties.

*Varieties.*] Yellow-flowered —— White-flowered.

This ſhrub is durable in root, ſtem, and branches, foliated moſt part of the year, and produces flowers ornamentally in July, ſucceeded by ripe ſeed in autumn.

It is an exotic from Spain and Italy, long ſince introduced into our gardens; formerly kept as a green-houſe plant, but now is ſufficiently naturalized to this climate to ſucceed in the open air all the year, in a ſheltered, dry ſituation; though it is ſtill alſo proper to keep ſome in pots, to move under ſhelter of a frame, or green-houſe, in ſevere winters, by way of a reſerve, in caſe the fully-expoſed plants ſhould be killed by the froſt.

It is eaſily propagated by ſlips, or cuttings of the branches; and by ſeed.

By Slips, &c.—In ſpring or ſummer, ſlips or cuttings of the young ſhoots may be planted either in pots, ſeveral in each, or in a bed or border of good earth; or, to forward them as much as poſſible, a quantity of ſlips may be planted in pots in ſpring, and plunged in a hot-bed; obſerving, in either caſe, to give due waterings, and occaſional ſhade from the ſun till rooted; and in autumn following, they may be tranſplanted in nurſery-rows, for a year or two, and ſome in pots, for occaſional ſhelter in winter.

By Seed —This may be ſowed in April, in a bed of light earth; and they will ſoon come up, and be fit for planting out early in autumn following.

*Hardy herbaceous kinds.*

There are many herbaceous germanders; but the moſt material are the following perennials, all principally of the fibrous-rooted tribe, riſing moſtly with herbaceous ſtalks; both of procumbent and erect growth; ſeldom exceeding a foot and a half long or high; which in ſome are annual, and ſome become ſomewhat ligneous and abiding; are cultivated for variety and obſervation, and ſome as medical plants.

2 TEUCRIUM *Scordium.*

*Scordium, or Common Water Germander.*] Hath creeping perennial roots, ſending up many ſquare, procumbent, or trailing ſtalks, branching diffuſely; oblong, indented, ſerrated, cloſe-ſitting, oppoſite leaves; and ſmall reddiſh

reddiſh flowers, generally two together, from the ſides of the ſtalks and branches, in July and Auguſt.

This is a medicinal herb, and ſmells ſtrongly of garlic.

It grows naturally in marſhy places, in the iſle of Ely, and other parts of England, and moſt parts of Europe; and ſometimes admitted in gardens, in moiſt places, for variety, and as a medical plant.

[3] TEUCRIUM *Scorodonia.*

*Scorodonia, or Wood Sage.*] Hath a fibrous, creeping, perennial root; upright, four cornered ſtalks, a foot and a half high; heart-ſhaped, ſerrated, foot-ſtalked leaves; and racemous cluſters of whitiſh flowers, from the ſides of the ſtalk upward, ranged moſtly towards one ſide, appearing in July.

It grows naturally in woods and thickets in England, &c.

[4] TEUCRIUM *Chamædrys.*

*Chamædrys or Smaller-creeping Germander.*] Hath fibrous, very creeping, ſpreading roots; many four-cornered, very branchy, trailing ſtalks, near a foot long; oval, cuneiform, cut, crenated leaves, on ſhort foot-ſtalks; and reddiſh flowers, growing almoſt in a verticillus, or whirls, round the ſtalk, three on each peduncle; appearing in June and July. —Is a native of Germany, France, &c.

[5] TEUCRIUM *Canadenſe.*

*Canada Germander.*] Hath a fibrous perennial root; upright ſtalks, a foot and a half high; oval, lanceolate, ſerrated leaves; and white or reddiſh flowers, collected in racemous cluſters, terminating the ſtalks, having ſix leaves under each verticillus, or whirl; flowering in July.

[6] TEUCRIUM *lucidum.*

*Shining Germander.*] Hath a fibrous creeping, perennial root; upright, ſmooth, blackiſh green ſtalks, branching diffuſely; oval-oblong, cut-ſerrated, ſmooth, ſhining-green leaves; and purple flowers by pairs, at the axillas of the ſtalks and branches.—Grows naturally in France and Germany.

The following are principally of the *polium* or poly kind, moderately hardy, but rather impatient of ſevere froſt; ſo ſhould alſo keep ſome in pots, to move under ſhelter in winter.

[7] TEUCRIUM *Polium.*

*Polium, or Common Yellow Mountain Poly.*] Hath a fibrated perennial root; herbaceous, trailing, branchy ſtalks, proſtrate on the ground; oblong, obtuſe, crenated, downy, ſeſſile leaves; and the branches terminated by roundiſh heads of yellow and other coloured flowers in the varieties; appearing in June and July.

*Varieties.*] There are many varieties of this ſpecies, diſtinguiſhed by ſome little variation in their growth, having all roundiſh heads of flowers; moſtly, however, either white or yellow.

It grows naturally in Spain and Portugal, &c.

[8] TEUCRIUM *Montanum.*

*Mountain Poly, with Lavender Leaves.*] Hath a fibrous, tough, ligneous root; ſomewhat ligneous, weak, procumbent ſtalks; ſpear-ſhaped entire leaves, hoary underneath; and ſmall white flowers in a corymbus at the termination of the branches, in June and July.

[9] TEUCRIUM *Pyreniacam.*

*Pyrenean Mountain Poly.*] Hath ſlender, trailing, ſomewhat ligneous, hairy ſtalks; wedge-ſhaped, and roundiſh crenated leaves; and flowers produced in a corymbus at the ends of the branches, of different colours in the varieties; appearing early in ſummer.

*Varieties.*] Purple-flowered—White-flowered—Variegated purple and white-flowered.

[10] TEUCRIUM *Pumilum.*

*Dwarf Mountain Poly.*] Hath ſomewhat ligneous, procumbent, ſlender, downy ſtalks, lying on the ground; linear, or very narrow, plane, leaves in quadriſarous cluſters; and reddiſh flowers, collected into ſmall heads, terminating the branches,—in June and July.

[11] TEUCRIUM *Capitatum.*

*Capitated Mountain Poly.*] Riſes with upright, ſomewhat ligneous, branchy ſtalks, a foot high; ſpear-ſhaped, crenated downy leaves; and white flowers collected into round heads at the end of the branches, ſtanding on peduncles; appearing in June and July.

All theſe herbaceous *Teucriums* flower commonly in June and July; the flowers ſeparately ſmall, of the monopetalous ringent kind; produced generally in a ſort of verticillus, or whirls, towards the upper part of the branches: in ſome placed at a diſtance, and in others in cloſe heads or ſpikes; ſucceeded in the firſt three or four ſorts by plenty of ſeed in autumn; but the others do not always ripen ſeeds freely in England.

They are all perennial plants, durable in root; and ſome of the ligneous kinds are alſo

alſo abiding in ſtalk, more particularly ſome of the *Poliums*.

All the ſorts are occaſionally employed in gardens for variety and obſervation; and may be had at moſt of the nurſeries.

The firſt four or five ſorts are very hardy plants, that will ſucceed any where in the full ground, but moſt proſperouſly in a moiſt ſituation; all of which may he propagated abundantly by ſlips of the roots, in autumn or winter; or of the young ſhoots in ſpring and ſummer; alſo by ſeeds.

But the *Polium* kinds are rather a little tender, and ſhould therefore have generally a dry, raiſed, ſheltered, ſunny ſituation, as before obſerved; and ſome ſhould alſo be potted for ſhelter in winter, under a frame, or in a green-houſe.

As to the method of propagating all theſe ſorts, it is either by parting the roots, by ſlips of the branches, or by ſeeds.

The firſt five ſorts may be propagated plentifully, either by ſlipping the roots, in autumn, winter, or ſpring; or by ſlips or cuttings of the young ſhoots in ſpring, or early part of ſummer, planted in a moiſt ſhady place; or by ſowing the ſeeds in a bed or border of common earth in the ſpring.

The *Polium* kinds may likewiſe be raiſed plentifully from ſeed, and by ſlips or cuttings of the ſhoots in ſpring. The ſeed is generally obtained from abroad, which ſhould be ſowed in ſpring in a bed of light earth, a quarter of an inch deep; where the plants will ſoon come up, and be fit to prick out in July or Auguſt; either in nurſery-rows till autumn or ſpring, or planted at once where they are finally to remain.—And as to the propagation by ſlips, it may be performed in April, chuſing the moſt robuſt ſhoots, and plant them in an eaſterly border, giving occaſional waterings and ſhade; and they will be well rooted by autumn for tranſplantation.

*Tender ſhrubby kinds for the green-houſe collection.*

Several of the ſhrubby kinds of *Teucrium*, being exotics of tenderer quality, require ſhelter here in winter of a green-houſe or garden-frame; ſo are commonly retained in pots, and placed among the green-houſe plants, ſerving to encreaſe the variety of that collection; and the following are the principal ſorts thereof in the Engliſh gardens, being all moderate-growing ſhrubby plants, cloſely garniſhed with ſmall ſimple leaves, moſtly of a ſomewhat hoary or downy nature; and flowers growing in the verticillate order.

[12] TEUCRIUM *fruticans*.

*Shrubby or Spaniſh Tree Germander.*] Riſes with an upright, ſhrubby, hoary ſtalk and branches, five or ſix feet high; having oblong-oval entire leaves, ſmooth above, and hoary underneath, placed oppoſite on ſhort foot-ſtalks; and blue flowers at the axillas of the branches, one on each peduncle; appearing great part of ſummer.

*Variety.*] With ſtriped leaves.

[13] TEUCRIUM *latifolium*.

*Broad-leaved Spaniſh Tree Germander.*] Riſes with a ſhrubby downy ſtalk and branches, five or ſix feet high; having broad, rhomboid-ſhaped, acute, entire, hairy leaves, downy underneath; and pale-blue flowers ſingly at the ſides of the branches; appearing moſt part of ſummer.

[14] TEUCRIUM *Marum*.

*Common Marum, or Syrian Maſtick.*] Riſes with an upright ſhrubby ſtalk, and numerous ſlender hoary branches, from about a foot and a half to two or three feet high; having very ſmall oval, entire leaves, pointed at both ends, hoary underneath, and placed oppoſite; and bright-red flowers in cluſters at the ends of the branches, generally ranged on one ſide, having hairy cups; appearing in July and Auguſt, but rarely any ſeeds in England.

This is a fine aromatic, and is an old reſident of our gardens, eſteemed both for its aromatic property; and to effect variety, generally as a green-houſe plant, though it will alſo ſometimes ſucceed in the full ground, if planted in a dry ſheltered ſituation; affording it protection of mats in very ſevere weather.

[15] TEUCRIUM *Maſſilienſe*.

*Marſeilles Under-ſhrubby Germander.*] Riſes with upright, ſuffruticoſe, or under-ſhrubby ſtalks, about a foot high; oval, cut-crenated, rough, hoary leaves; and purple flowers in erect cluſters, terminating the ſtalks; appearing in July, ſucceeded by ripe ſeed in autumn.

All theſe ſhrubby germanders under this head (Green-houſe kind) are univerſally perennial, or durable in root, ſtem, and branches; and generally retain their leaves moſt part of the year, flowering abundantly every ſum-

ſummer, but rarely ripen good ſeeds in England.

As all theſe green-houſe ſorts are exotics from diſtant warm countries, require to be ſheltered here in winter from froſt; and therefore muſt generally be cultivated in pots, in order to be moved into a green-houſe or garden-frame, during the winter, and managed as other green-houſe ſhrubs, (ſee GREEN-HOUSE PLANTS); but ſome may alſo be planted in the full ground, in a warm dry ſituation, where they will often ſtand through our moderate winters tolerably well; but are liable to ſuffer by ſevere froſt, which renders it neceſſary to treat the principal part generally as green-houſe exotics.

The propagation of all theſe tender ſhrubby kinds, is by ſlips, or cuttings of the young ſhoots of the branches in ſpring, and early part of ſummer, as directed for the firſt ſpecies (*Teucrium flavum*); and when rooted, plant moſt of them ſingly in pots for removing to occaſional ſhelter in winter, and managed as before hinted; others plant in the open air, in a dry warm expoſure, to take their chance.

## THALICTRUM.

Meadow Rue.

This genus conſiſts wholly of hardy, herbaceous, fibrous-rooted perennials, ſome of which are cultivated in gardens for variety and ornament, riſe moſtly with upright ſtalks annually, adorned with many-lobed leaves, and ſmalliſh tetrapetalous flowers, generally crowning the ſtalks in paniculated bunches.

Claſs and order, *Polyandria Polygynia.*

*Characters.*] CALIX, none. — COROLLA, four roundiſh, concave petals that ſoon fall off.—STAMINA, numerous compreſſed filaments, broadeſt above, and terminated by oblong erect antheræ. — PISTILLUM, numerous roundiſh pedicellated germina, having thickiſh ſtigmas.—PERICARPIUM, none. —Numerous oval ſulcated ſeeds in a head.

There are twelve or fourteen ſpecies, and the moſt noted of which in our gardens are the following, retained in the pleaſure-ground for variety; all of which have perennial roots, moſtly fibrated and creeping; and ſend up erect herbaceous ſtalks annually, in ſpring, which conſtantly decay to the ground in autumn.

[1] THALICTRUM *flavum.*

*Greater Yellow Thalictrum, or Common Meadow Rue.*] Hath a thick, fibrous, creeping, yellow root; ſending up ſeveral round, furrowed, leafy ſtalks, five or ſix feet high; garniſhed with many-lobed leaves, having moſt of the lobes cut into three parts; and numerous whitiſh flowers terminating the ſtalks in many paniculated bunches, ſtanding erect.

*Variety.*] Montpelier yellow-flowered, called *Thalictrum Specioſum.*

This ſpecies grows wild in meadows, and other moiſtiſh places, and by river ſides in England, &c. and is ſometimes introduced in gardens for variety.

[2] THALICTRUM *aquelegifolium.*

*Columbine-leaved Thalictrum, commonly called Feathered Columbine.*] Hath a thick fibrous root; upright taper ſtalks, three or four feet high; large leaves compoſed of many lobes, much like the *aquilegia* or columbine; and numerous whitiſh flowers, terminating the ſtalks in large panicles, ſucceeded by ſtraight, triangular, pendulous ſeeds.

*Varieties.*] Green-ſtalked, with white flowers and ſtamina—Purple-ſtalked, with purple flowers and ſtamina.

Is an inhabitant of Helvetia, &c. but has been long in the Engliſh gardens.

[3] THALICTRUM *Cornuti.*

*Canada Thalictrum of Cornutus.*] Hath a fibroſe dark-coloured root; upright, ſmooth, purpliſh ſtalks, three or four feet high, branching towards the top; large many-lobed leaves like thoſe of columbine; and numerous white flowers terminating the ſtalks and branches, in large panicles, each flower having five petals.

[4] THALICTRUM *anguſtifolium.*

*Narrow-leaved German Thalictrum.*] Hath a fibrated root; upright ſtalks, two or three feet high; large pinnated leaves, of many very narrow entire lobes, and numerous ſmall whitiſh flowers in panicles, at the top of the ſtalks.

[5] THALICTRUM *tuberoſum.*

*Tuberoſe-rooted Spaniſh Thalictrum.*] Hath a root hung with many-knobbed tubers; upright, almoſt naked ſtalks, a foot and a half high; ſmall obtuſe leaves, three-parted at the end; and largiſh white flowers, in roundiſh bunches, at the top of the ſtalks; each flower having five petals.

[6] THALICTRUM *minus.*

*Leſſer Meadow Rue.*] Hath ſmall, fibrous, creeping roots; ſlender branching ſtalks, about a foot high; leaves cut into ſix parts; ſmall and whitiſh and yellow flowers, in a nod-

nodding poſition, in looſe panicles, at the top of the ſtalks.—It inhabits moiſt meadows and paſtures in England, &c.

7 THALICTRUM *fœtidum.*

*Fœtid* or *Stinking Dwarf Thalictrum.*] Hath a fibrous creeping root; ſlender, paniculated, branchy, leafy ſtalks, ſix or ſeven inches high; leaves compoſed of many ſmall, indented foliola, having a ſtinking odour; and ſmall whitiſh flowers in looſe panicles, at the top of the ſtalks.——Grows naturally in the ſouth of France, and Helvetia, &c.

8 THALICTRUM *Alpinum.*

*Alpine Dwarf Thalictrum.*] Hath a fibrous creeping root; ſlender, ſingle, almoſt naked ſtalks, about ſix inches high; leaves having ſmall obtuſe lobes, and whitiſh flowers in ſingle cluſters terminated the ſtalks.

All theſe ſpecies of *Thalictrum* generally flower in June and July, except the Alpine ſort, which commonly flowers in April or May; the flowers ſeparately are ſmall, but collected many together in paniculated bunches at top of the plants, each flower having generally four petals, and in ſome ſpecies five, as in their reſpective deſcriptions; and are ſucceeded by ripe ſeeds in Auguſt and September.

They are all very hardy herbaceous perennials, that will ſucceed in any common ſoil and expoſure, in the full ground; though generally are the moſt proſperous in ſhady moiſt ſituations: they are eſteemed, ſome as flowery ornamental plants, others principally as plants of variety, and botanical obſervation; though all the ſorts may be employed to diverſify the pleaſure-ground in any of the open compartments, in aſſemblage with other herbaceous perennials; and are all eaſily raiſed from ſlips of the root in autumn, which will creep exceedingly, and multiply in great abundance.

But the ſecond and third ſpecies are the ſorts that are the moſt commonly known, eſteemed, and cultivated in the Engliſh gardens as ornamental flower plants, they flowering more conſpicuouſly than the others; though the firſt ſort is alſo often admitted in eminent gardens to encreaſe the variety.

The propagation of all the ſorts is very eaſily effected in abundance, by parting the roots in autumn, when the ſtalks decay, or in the ſpring before new ones ſhoot forth; planting the ſlips, the ſtrongeſt where they are to remain, and the weakeſt in nurſery-rows, to have a ſummer's growth, or to remain till wanted.

Likewiſe by ſeed ſowed in the ſpring, in a bed or border; they will ſoon riſe, and the ſeedling plants will be fit to plant out towards autumn following.

THEOBROMA.

Chocolate Nut Tree, &c.

Compriſes two exotic trees of the Weſt Indies. retained here in ſome eminent ſtoves for variety; are adorned with large oblong and heart-ſhaped ſimple leaves, and ſmall pentapetalous flowers, in bunches, at the ſides of the branches.

Claſs and order, *Polyadelphia Pentandria.*

*Characters.*] CALIX, three oval, concave, reflexed, ſpreading deciduous leaves.—COROLLA, five concave, galeated or arched, quinquenervous petals, having each a bifid, horn-like briſtle at top, and a bell-ſhaped nectarium of five oval-lanceolate, connected, ſpreading leaves.—STAMINA, numerous awl-ſhaped filaments in five bodies, terminated by ſo many antheræ.—PISTILLUM, an oval germen, awl-ſhaped ſtyle, and ſimple ſtigma.—PERICARPIUM, a woody, unequal, oblong, or roundiſh fruit, or nut; having many oval fleſhy ſeeds arranged in five cells.

There are only two ſpecies, both of the tree kind, though the firſt is but of very moderate growth, and the ſecond obtains ſome conſiderable ſtature and magnitude.

1 THEOBROMA *Cocao.*

*Cocao or Chocolate Nut Tree.*] Riſes with an upright, robuſt ſtem, only about half a foot thick, branching ten or twelve feet high; large, oblong, entire, oppoſite leaves, near a foot long, and half as broad; and numerous yellowiſh flowers, in bunches, from the ſides of the trunk and branches; ſucceeded by oblong, quinquangular fruit, full of ſeeds, of which is made the chocolate.

This tree inhabits the hot parts of America, where it is alſo attentively cultivated for its fruit, to make the chocolate; being made of the kernels, which are firſt roaſted in a pan, and reduced to powder; then worked with orange water, and formed into a paſte; afterwards mixed with ſugar, aromatic ſpices, and perfume; then formed into rolls or cakes, and exported to Europe, and other different parts of the world.

2 THEOBROMA *Guazuma.*

*Guaz-*

*Guazuma, or Baſtard Cedar of Jamaica.*] Riſes with an upright large trunk, branching numerouſly and ſpreading, thirty or forty feet high; oblong, heart-ſhaped, ſerrated, alternate leaves, four inches long; and numerous ſmall yellowiſh flowers at the ſides of the branches; ſucceeded by roundiſh, tuberculated rough fruit, containing the ſeed.

Both theſe trees being exotics from the hot parts of America, in this country require the indulgence of a ſtove; ſo muſt be kept always in pots, and placed in that conſervatory, and managed as other woody exotics of ſimilar quality. See STOVE PLANTS.

They are propagated by ſeed obtained from abroad, ſowing it as ſoon after its arrival as poſſible, in pots, and plunged in a bark-bed, where they will ſoon come up; and when about three inches high, pot them off ſeparately, and plunge them in the bark-bed in the ſtove; and manage them as other woody exotics of this department.

THERMOMETER.

An inſtrument reſembling a weather-glaſs, for meaſuring and demonſtrating by inſpection the degrees of heat and cold at all ſeaſons, and which proves of great utility in the culture of tender exotic ſtove plants, by ſerving as a guide to regulate the proper degree of heat for ſtoves or hot-houſes, containing ſuch plants; particularly in winter, when fire heat is uſed. See STOVE.

At to the conſtruction of a botanical Thermometer for a hot-houſe, it conſiſts of a long ſlender glaſs tube, or pipe, about two feet long, having a ſmall glaſs ball or globe at the end; and is fixed longitudinally on a braſs or wooden plate or frame, the ſame length, or longer, and four or five inches broad; the glaſs tube and ball being furniſhed with a quantity of coloured liquid ſpirit, which is affected by heat and cold ſo as to aſcend higher or lower in the tube proportionably, a ſcale being marked on the frame along each ſide of the tube, divided into the different degrees of heat and cold; and the ſpirit aſcending by the heat of the internal air, promoted by fire, &c. points out on the ſcale the proper degree of heat required, having the name of ſome remarkable exotic, ſuch as the *anana*, or pine-apple, wrote on the ſcale as a ſtandard mark of the requiſite temperature of heat, ſo as when the internal heat of the ſtove raiſes the ſpirit to that mark, or within five degrees over or under, is the proper temperature for the growth of the *ananas*, and all other tender plants from the hotteſt parts of the world; ſo that the fires requiſite for the ſtove in winter, are to be made ſtronger or weaker, according to the direction in the Thermometer.

Thus a good Thermometer in ſtoves is more particularly uſeful in winter, during the time the fires are made in the flues for warming the air internally; it being generally hung up towards the centre of the ſtove, ſo as the warmth thereof may operate moderately and equally on every ſide, and diſcover the real temperature of the general internal heat, which ſhould be ſupported always nearly equal by the aid of bark hot-beds and real fire, ſufficient to raiſe the ſpirit in the tube to the mark *ananas* aforeſaid, or but a little over or under.

Remarking however, the Thermometer ſhould not only be ſuſpended nearly towards the centre of the ſtove, but alſo out of the ſun, or at leaſt placed with its back thereto, that the glaſs tube and ball containing the ſpirit, may be ſhaded from the ſun-ſhine as much as poſſible; and alſo placed at ſome diſtance from the fire place and flues, ſo as neither the direct rays of the ſun, or heat of the fire, darting immediately on the tube and ball, may affect the operation of the encloſed liquor, and cauſe it to mount conſiderably higher than would be effected by the real general warmth of the air of the ſtove, and be thereby led inadvertently into an error, in ſuppoſing the internal heat to be much ſtronger than it really is, when probably it is not ſtrong enough; which, if often repeated, might in time prove very prejudicial to the plants: therefore this inſtrument ſhould always be judiciouſly placed as above, ſo as to be affected only by the real general warmth of the internal air; and by obſerving this, you may eaſily regulate the ſtove heat at all ſeaſons to ſuch proper temperature as is requiſite for the culture of the plants before mentioned.

That therefore every ſtove ought to be furniſhed with a good botanical Thermometer, as a guide for more certainly determining at all times the neceſſary degree of heat; for in winter, when fires are requiſite, it is eaſy to make them of more or leſs ſtrength, as you ſhall ſee neceſſary, to warm the whole

incloſed air equally, to ſuch a temperature of heat, as to mount the ſpirit in the Thermometer to the degree marked *ananas*, which ſhould be well attended to, and continued always as nearly as poſſible to that ſtandard, or not exceeding five or ten degrees over or under.

Or if the Thermometer ſhould at any time diſcover the fire heat in winter, &c. to be conſiderably too ſtrong, let the fire be immediately leſſened, and open the door of the furnace to cool the flues; alſo, if calm mild weather, admit freſh air moderately, if it ſhall ſeem neceſſary, in order to reduce the heat as ſoon as poſſible, nearly to the proper ſtandard.

Likewiſe in ſummer, in very hot ſunny weather, if the internal heat of the ſtove appears by the Thermometer to be much too powerful in the middle of the day, it is eaſily reduced to the proper temperature, by ſliding open the glaſſes to admit free air, as you ſhall ſee convenient.

THYMUS.

Thyme.

This genus furniſhes the common Thyme, and ſeveral other low aromatic plants, moſtly perennials of ſomewhat ſuffruticoſe or undershrubby growth; ſome valued as noted potherbs, others as medical plants, and ſome for varietyin the pleaſure-ground; riſing with ſlender ſtalks and branches, from about half a foot to a foot or eighteen inches high; adorned with very ſmall leaves, and ſmall ringent flowers in verticillate ſpikes and heads, terminating the branches.

Claſs and order, *Didynamia Gymnoſpermia.*

*Characters.*] CALIX is monophyllous, tubular, bilabiated, and permanent; having the chaps hairy and cloſed, with the upper lip broad, plane, erect, and tridented, and with the lower one ending in two equal briſtles.—COROLLA, a ſmall ringent petal, having the upper lip ſhort, erect, obtuſe, and emarginated, and the under one long, broad, and tridented, with the middle ſegment the longeſt.—STAMINA, two long and two ſhort filaments, having ſmall antheræ.—PISTILLUM, a four-parted germen filiforme ſtyle, and a bifid, acute ſtigma.—PERICARPIUM, none; four ſmall roundiſh ſeeds lodged in the permanent calix.

There are ſeven or eight different ſpecies of *Thymus*, and of which the following are the moſt material ſorts for general culture; conſiſting of the common Thyme of our kitchen gardens,—*Serpyllum*, or Wild Thyme,—Maſtic Thyme, &c. each compriſing ſome varieties, and are all low, frutiſcent perennials, moſtly of very branchy buſhy growth, and durable in root, ſtem, and branches, and all hardy enough to grow freely in the full ground, in any common ſoil of a garden.

[1] THYMUS *Vulgaris.*

*Common Garden Thyme.*] Hath very fibrey roots; erect, ſlender ligneous ſtems, of very branchy and buſhy growth, a foot high, cloſely garniſhed with ſmall oval revolute leaves, and all the branches terminated by numerous ſmall, whitiſh-purple flowers, in verticilate ſpikes, appearing in ſummer, and ſucceeded by abundance of ripe ſeed early in autumn.

*Varieties.*] Broad-leaved — Narrow-leaved —Variegated or ſtriped-leaved.

It is an inhabitant of rocky places in France and Spain, &c. but all the varieties have been long reſidents of our kitchen-gardens as eminent aromatic pot-herbs, and as medical plants; alſo occaſionally in the pleaſure-ground for variety, and ſometimes as edgings to beds and borders, on account of its cloſe buſhy growth; but its principal eſtimation is for kitchen and medicinal uſes.

[2] THYMUS *Serpyllum.*

*Serpyllum, Creeping Wild Thyme, or Mother of Thyme.*] Hath decumbent creeping ſtalks, ſix or eight inches long, or more; garniſhed with obtuſe, plane leaves, ciliated at the baſe, and the branches terminated by numerous ſmall, purpliſh flowers, growing in heads, appearing in ſummer, ſucceeded by plenty of ripe ſeeds in autumn.

*Varieties.*] Broad-leaved.—Narrow-leaved Broad hairy-leaved — Variegated-leaved — Citron-ſcented, commonly called Lemon Thyme—Greater purple-flowered.

This ſpecies inhabits paſtures, heaths, and commons, in moſt parts of Britain, and other parts of Europe; and is admitted into many gardens for variety, more particularly the variegated ſort, and that called Lemon Thyme, which are ſometimes diſpoſed ſingly about the borders, &c. and ſometimes in pots; and were alſo formerly employed to form edgings; but the Lemon Thyme in particular is in high eſtimation for its agreeable odour.

[3] THYMUS *Maſtichina.*

*Maſtichina, or Maſtich Thyme.*] Riſes with ſlender ligneous ſtalks and branches, a foot long, or more; garniſhed with oval, obtuſe, hoary leaves; and the branches terminated by the flowers in verticillate, downy heads, appearing in June, but rarely ſucceeded by ſeeds in England.

*Varieties.*] White-flowered—Red-flowered.

It is a native of rocky places in Spain, but is an old inhabitant of our gardens, chiefly as a finely-ſcented aromatic, and for variety.

[4] THYMUS *Zygis.*

*Zygis, or Shrubby narrow-leaved Spaniſh Thyme.*] Riſes with low, under-ſhrubby, erect ſtalks; long, very narrow leaves, ciliated at the baſe; and flowers terminating the branches in verticillate ſpikes.

[5] THYMUS *cephalotos.*

*Large headed Portugal Thyme.*] Riſes with low ligneous ſtalks, and ſtiff hoary branches, half a foot long; ſpear-ſhaped hoary leaves, placed oppoſite; and many whitiſh flowers, terminating the branches in large imbricated heads, having oval bracteal leaves.

*Variety.*] With ſmall flowery heads.

All theſe five ſpecies of *Thymus*, and their varieties, are of an aromatic quality, and their chief virtue reſides in the leaves, which impart a very agreeable aromatic fragrance. But the firſt three ſpecies are the moſt noted ſorts in the Engliſh gardens; though the *Thymus Vulgaris*, or Common Thyme, is conſiderably the moſt generally known and cultivated, chiefly for its ſuperior aromatic property, for culinary purpoſes.

They are univerſally perennial, ſomewhat between a ſhrubby and an herbaceous nature, wholly abiding in root and top, generally of ſomewhat buſhy growth; their leaves in general very ſmall, but cloſely placed, and moſtly evergreen: the flowers alſo are very ſmall, monopetalous, and ringent, and collected numerouſly in whirls, either forming ſpikes or cloſe heads, each flower ſucceeded by four ſeeds lodged in the calix. See the *Characters*; and by ſeeds all the ſpecies may be raiſed, as alſo by ſlips and cuttings; and by theſe latter methods only, the varieties are with certainty continued.

As to the uſe in gardens of theſe aromatics, the Common Thyme is in univerſal eſtimation as a pot-herb for various culinary purpoſes; and being eaſy of propagation and culture, merits a place in every kitchen-garden: which alſo, together with the other ſorts, and their varieties, might be introduced in the pleaſnre-ground, in aſſemblage with other ſmall frutiſcent plants, to embelliſh the front of raiſed ſhrubbery clumps, and ſloping banks, &c. placing them detached or ſingly, to form little buſhy tufts; likewiſe ſome plants of the variegated ſorts, and of the Lemon Thyme, may alſo be potted, in order to move occaſionally to any particular compartment, and under occaſional ſhelter in very ſevere winters, to preſerve the ſorts.

But as to the *Common Thyme*, deſigned for kitchen uſe, it ſhould be cultivated in beds, or borders, in rows, half a foot aſunder at leaſt; either the ſeed ſowed where the plants are to remain, or young ſeedling plants previouſly raiſed for planting out; or ſlips of old plants detached with roots, which being planted the above diſtance, they will ſoon increaſe into buſhy plants, proper to gather for uſe; or may be occaſionally planted as an edging in the herbary, &c. and in either method the plants will prove abiding, and multiply exceedingly by off-ſets; and by which the plants may be propagated at pleaſure, by ſlipping them as above, when wanted for increaſe; though it is alſo adviſeable to raiſe a quantity of plants every year or two from ſeed, as the young ſeedlings poſſeſs a ſtronger aromatic quality than the older plants: and in market gardens, where large quantities are required for ſale, ſhould always raiſe a due ſupply annually from ſeed, as practiſed by the London gardeners; which being ſowed in ſpring in a bed of light earth, either broad-caſt and raked in, or in ſhallow drills, as directed below, they ſoon come up, and the plants want thinning in June, to ſix inches diſtance, and will be fit for uſe the following autumn and winter, &c.

In gathering Thyme for uſe, in private gardens it may be cut or ſlipped a little at a time, as it is wanted, not ſtumped too cloſe; but when intended for market, the London gardeners generally pull it up root and all, eſpecially the ſeedling plants, which remain in the bed where raiſed, and ſo raiſe a freſh crop from ſeed annually.

*Method of propagating all the ſorts.*

All the ſpecies of Thymus may be eaſily raiſed from ſeed, and by ſlipping the roots and branches, and by cuttings thereof.

By Seed.—All the ſorts may be raiſed plenteouſly from ſeed; though it is rarely practiſed to any but the firſt ſort, Common Thyme; and March or early in April is the proper ſeaſon for ſowing it; chuſing any light rich, dry ground; which let be properly digged, and the ſurface moderately ſmoothed with the ſpade, becauſe the ſeed is very ſmall, and ſhould not be ſowed too thick, nor covered too deep; this obſerved, let the ſeed be ſowed whilſt the ground is freſh ſtirred, ſowing it either broad-caſt on the ſurface, and rake it in lightly, or ſow it in flat ſhallow drills, and earth it over thinly in proportion: it will ſoon germinate, and the plants will appear in two or three weeks, being careful to keep them well weeded, and give occaſional light waterings in dry weather; and thus by June they will require thinning, to ſix or eight inches diſtance; when, if required, thoſe thinned out may be planted in another place, in rows, ſix or eight inches aſunder, giving water till freſh rooted, obſerving to keep the whole clean from weeds by occaſional hoeing between them in dry days, which will alſo ſtir the ſurface of the earth, and thereby much improve the growth of the plants; and they will arrive to good perfection early in autumn.

Remark, in reſpect to the varieties, that there is no depending on raiſing them the ſame from ſeed; therefore, when intending to propagate any particular varieties, and continue them the ſame with certainty, it can only be effected by ſlips and cuttings as below.

By Slips.—All the ſorts multiply exceedingly both by ſlips of the root and of the branches; the rooted ſlips are the moſt expeditious method, for the old plants encreaſe conſiderably into many off-ſet ſtems, riſing immediately from the root, each furniſhed with fibres; and that by taking up the old plants in the ſpring, &c. and ſlip or divide them into as many ſeparate ſlips as you can, with roots to each, and plant them in beds of good earth, in rows half a foot aſunder, giving water directly, and repeat it occaſionally in dry weather till they have taken root, and begin to ſhoot at top; and thus they will ſoon grow freely, and form good buſhy plants in two or three months.

But ſlips alſo of the branches without roots, will likewiſe ſucceed, if planted, any time from March or April until about Midſummer; obſerving to ſlip off a quantity of the ſtouteſt young outſide ſhoots, of moderate length, and plant them in a ſhady border, in rows four or five inches diſtance, giving due waterings; they will ſoon emit roots, and become good plants by autumn, when they may be tranſplanted to where they are to remain.

By Cuttings. — Cuttings of the young branches grow readily the ſame as ſlips thereof, there being no other difference, than that the cuttings are the young ſhoots cut off with a knife, and the ſlips are ſliped off from the ſide of the branches with the hand only; ſo that the propagating them by cuttings may be performed any time in ſpring, or early part of ſummer, planting them in a ſhady place, and duly watered, they will readily take root, and grow.

Obſerve, as before ſuggeſted, the propagation by ſlips or cuttings is alſo the only method by which the reſpective varieties of the different ſpecies are with certainty continued the ſame, as the plants thus raiſed will be in every reſpect ſimilar to the parent.

## THYRSUS.

A Thyrſe.

One of the modes of inflorescence, or manner of flowering, of the aggregate kind; being many flowers collected in a bunch, or ſort of cloſe panicle, of an oval or egg-ſhaped form, having the lower foot-ſtalks, which are longer, extend horizontally, whilſt the upper ones are ſhorter, and mount vertically, as in lilac and horſe cheſnut, &c.

## THUYA.

*Arbor Vitæ*, or Tree of Life.

This genus furniſhes beautiful hardy evergreen trees, of the coniferous tribe, for adorning the ſhrubbery, and other hardy plantations, being of erect tall growth, very branchy to the bottom; cloſely garniſhed with very ſmall imbricated leaves, and ſmall apetalous male and female flowers ſeparately on the ſame tree.

Claſs and order, MONOECIA *Monadelphia.*

*Characters.*] CALIX, male and female flowers apart on the ſame plant; the males being collected in an oblong, oval amentum, growing oppoſite on the common foot-ſtalk, the florets having an oval concave ſcale for the cup; and the female flowers form an oval cone,

cone, having a ſcale for a cup to every two florets. — COROLLA, ſmall florets, without any petals. — STAMINA, four very ſmall, monadelphous filaments in the males, having the antheræ adhering to the baſe of the calicinal ſcale.—PISTILLUM, in the females a very ſmall germen, ſlender ſtyle, and ſingle ſtigma. — PERICARPIUM, an oblong oval cone, opening longitudinally, compoſed of nearly equal ſcales, convex on the outſide, and obtuſe, each having an oblong ſeed, ſurrounded with a membraneous wing.

There are three ſpecies of *Thuya*, two of which only are common to the Engliſh gardens, being eſteemed fine ornamental evergreens of the tree kind; and which, although exotics, the one principally from America, the other from China, are hardy enough to flouriſh here in almoſt any common ſoil and expoſure, and remain in verdure the year round; are therefore in great eſtimation for all ornamental plantations.

They are both of the very ſmall-leaved kind, with the leaves imbricated, or lying over one another like ſcales.

The ſpecies are,

[1] THUYA *Occidentalis*.

*Occidental, or Common American Arbor Vitæ.*] Riſes with a large upright ſtrait trunk, branching on every ſide irregularly, forty feet high or more, with the branches growing ſomewhat horizontally and ſtraggling; being cloſely garniſhed with very ſmall leaves, placed imbricatim, or over each other, appearing of a dark duſky-green colour; and with male and female flowers apart, at the ſides of the young branches in ſpring, ſucceeded in the females by ſmooth cones, having ſmooth obtuſe ſcales, containing oblong ſeeds.

*Varieties.*] Common American Arbor Vitæ — American ſweet-ſcented — Variegated-leaved.

This tree grows naturally in Canada, in North America, and in Siberia, is of an aromatic and reſinous nature; the leaves emit a ſtrong odour; alſo the wood, which is likewiſe remarkably durable: hence it is ſaid the tree anciently derived the name *Arbor Vitæ*, or Tree of Life.

[2] THUYA *Orientalis*.

*Oriental, or Chineſe Arbor Vitæ.*] Grows with a ſtraight upright ſtem, branching erectly, cloſe, and regular, thirty or forty feet high, very cloſely garniſhed with very ſmall flat leaves, placed imbricatim, appearing always of a bright-green colour; and male and female flowers ſeparately at the ſides of the young branches in ſpring, ſucceeded by rugged cones, compoſed of acute-pointed reflexed ſcales, having ripe ſeeds in autumn, or towards ſpring.

Both theſe trees are natives of diſtant countries, the firſt being of North America and Siberia, as before obſerved, and the other a native of China, inhabitants of humid ſoils, where they arrive to a conſiderable ſtature and magnitude; and from which countries they were many years ſince introduced into the European gardens, as ornamental trees in the pleaſure-ground; being hardy enough to ſucceed in the open air all the year, in any common ſoil and ſituation, and thrive as in their native climate; and are all eaſily raiſed from ſeed, layers, and cuttings, as hereafter directed.

They, in their general growth, aſſume a picturesque ornamental appearance, being finely branched to the very bottom, always fully adorned with leaves, which are univerſally of a very minute ſize, but very cloſely and curiouſly arranged in an imbricated manner, exhibiting a perpetual verdure: on the whole, the trees effect a very diſtinguiſhable variety at all ſeaſons.

And as to their flowering, they flower early in the ſpring; but the flowers being ſmall and apetalous (without petals), they are not ornamental; are univerſally monoecious, or male and female, ſeparated on the ſame tree; conſiſting wholly of ſcaly calixes, containing the fructifications, collected into oblong and conic bunches; the males being in oblong amentums, and the females in cloſe oval cones, which become that ſort of ſeed-veſſel called a cone, furniſhing ripe ſeed in autumn, or towards ſpring.—See CONIFERÆ and CONUS.

The firſt ſort, *Common American Arbor Vitæ*, is the oldeſt reſident in our gardens, very diſtinguiſhable from the other by the dark-green colour of its leaves; which, however, in winter particularly, aſſume a diſagreeable duſky hue.

But the *Chineſe Arbor Vitæ* is both of more regular growth, and its foliage continued always of a fine lively green, ſummer and winter,

ter, and is generally a more beautiful tree than the other.

However, both the ſorts are in high eſtimation, as fine ornamental evergreens, and moſt elegant furniture for adorning the ſhrubbery, and all other garden-plantations, deſigned for variety and ornament; have alſo a fine effect, diſpoſed ſingly in the open ſpaces of graſs ground, in the ſhrubbery or wilderneſs; in all of which ſituations, ſuffering them generally to grow rural, nearly in their own natural way, except reducing with a knife any very ſtraggling or rambling branches occaſionally; which is principally all the culture they require.

But theſe trees may alſo be employed as timber-trees, on the evergreen foreſt-tree plantations. See FOREST TREES.

They are cultivated in all the public nurſery grounds for ſale, and may be tranſplanted in autumn, or almoſt any time in open weather, from October until March or April.

*Method of Propagation, &c.*

The method of propagating both theſe trees, is by ſeed, layers, and cuttings.

By Seed.—Both the ſorts ripen ſeed in England, and are alſo obtained in great plenty from abroad by the ſeedſmen; and which ſhould generally be ſowed ſoon after they are ripe, or as ſoon as they can be obtained in autumn or ſpring; ſowing them in pots or boxes of light earth, covering the ſeeds half an inch deep, and place the pots, &c. in a ſheltered warm ſituation, or under ſhelter of a frame in bad weather; eſpecially if ſowed in autumn; that the ſeeds may be protected from ſevere froſt, and continued forward in their vegetative efforts: and thus they will ſometimes come up in the ſpring; which, however, are frequently apt to remain in the ground till the ſecond year; obſerving when the plants are come up, the pots ſhould be placed in an eaſt border, to have only the morning ſun, but open to the free air, giving frequent but very moderate waterings all ſummer; and in winter remove the pots again to a ſheltered place till ſpring; then may be pricked out in nurſery-rows, or if they are very ſmall and weakly, let them remain in the pots another year, placing them in the ſhade during the ſummer, and in a ſheltered place in winter; and in ſpring following plant them out in the nurſery, in rows a foot or two aſunder, to remain to acquire due ſize and ſtrength, for final tranſplantation.

By Layers.—The young ſhoots only of one or two years growth are the proper parts for laying, which may be performed early in autumn, bending down the branches to the earth; and lay all the young wood on each, either by ſlit, or twiſt-laying, with their tops only appearing a little above ground; ſhortening any that have much longer tops than the others, (ſee LAYING): thus they will moſt of them emit roots in the earth, and be proper plants by autumn following; when, or rather in ſpring after, they ſhould be ſeparated from the ſtools, and planted in nurſery rows, to remain two or three years, or till of due ſize for the ſhrubbery, &c.

By Cuttings.—Autumn is the beſt ſeaſon for planting the cuttings, which muſt be of the young ſhoots, principally all of the ſame years growth; and ſhould be planted in a ſhady border. Taking therefore opportunity of ſhowery weather, if poſſible, and chuſing the moſt robuſt young ſhoots, cut them off with a ſmall part of the old wood, where practicable, and plant them in rows a foot aſunder, cloſing the earth well about them: they will be properly rooted in one year, fit for planting out in wider nurſery-rows.

TILIA.

Lime, or Linden-tree.

Conſiſt of only two ſpecies, both of them very eminent hardy deciduous trees, of formal growth, proper for ornamental and timber plantations, &c. they riſing with large upright trunks a conſiderable height, branching numerouſly all around, into large regular conical heads, adorned with broad heart-ſhaped leaves, and ſmall pentapetalous flowers, in looſe bunches.

Claſs and order, *Polyandria Monogynia.*

*Characters.*] CALIX is concave, five-parted, coloured, and deciduous. — COROLLA, five oblong, obtuſe petals, crenated at top.—STAMINA, numerous awl-ſhaped filaments, and ſimple antheræ.—PISTILLUM, a roundiſh germen, ſlender ſtyle, as long as the ſtamina, and a pentagonal obtuſe ſtigma.—PERICARPIUM, a globular, coriaceous, quinquevalvular, quinquelocular capſule, opening at the baſe, containing roundiſh ſeeds ſingly in each loculi or cell; though very com-

commonly there is but one ſeed in the whole, and ſo ſituated that the capſule often appears unilocular, if incautiouſly examined.

There being but two ſpecies, one is a European tree, and the other is of America; each comprehending ſome varieties, and are all very hardy, and of the deciduous tribe.

[1] TILIA *Europea.*

*European or Common Lime Tree.*] Riſes with an upright ſtraight trunk to a great height and magnitude, branching regularly all round into a large conical head; garniſhed with large, broad, heart-ſhaped, acute-pointed, ſerrated leaves, of a light-green colour; and ſmall whitiſh-green flowers in bunches, at the ends of the branches, having all the flowers deſtitute of nectaria.

*Varieties.*] Common green-twigged Lime-tree, having all the young ſhoots of a light-green colour—Red-twigged Lime-tree, having all the ſhoots of a beautiful red colour, appearing very ſingular in winter, when deſtitute of leaves. — Large-leaved — Smaller-leaved —Rough or elm-leaved —Variegated-leaved, &c.

The green and red-twigged varieties are tolerably permanent, ſo that being raiſed from ſeed, the plants of each will be moſtly ſimilar to the parent tree.

This ſpecies grows naturally in England and moſt parts of Europe, and has been long cultivated as an ornamental tree in garden plantations, both to grow rural, and to form hedge-work regularly trained.

[2] TILIA *Americana.*

*American Black Lime Tree.*] Grows with an upright large lofty trunk, branching regularly into a large formal head, having the branches covered with a blackiſh-brown bark; large, broad, heart-ſhaped, acuminated, ſerrated leaves, of a deep-green above, and paler underneath; and ſmall greeniſh flowers in bunches at the ends of the branches, having all the flowers furniſhed with nectaria.

*Varieties* ] Larger-leaved —Smaller-leaved. —Carolinian long-pointed-leaved.

Both the ſpecies, and their reſpective varieties, flower in ſummer; the flowers ſmall, and of inconſiderable appearance, and are ſucceeded by plenty of ripe ſeed in autumn, contained in ſmall coriaceous or leathery capſules; and by the ſeed all the ſorts are eaſily raiſed in beds of common earth.

Theſe noble trees are quick handſome growers, and obtain a great ſtature and ſubſtance of trunk, particularly the Common Lime, which grows ſixty or ſeventy feet high; and there are accounts of ſome that have meaſured ninety feet in height, and more than eight or ten yards circuit in the trunk, with branchy heads proportionably large; but the timber being of a ſoft light texture is unfit for any ſtrong purpoſes; is however excellent for numerous light uſes, in the turnery and carving branches particularly.

But for purpoſes in gardening, the Lime-tree has been long in great eſteem for ornamental purpoſes, in various garden diſtricts, being valued for its quick and fine pictureſque growth and large elegant light-green foliage, that effect a very diſtinguiſhable diverſity; was therefore in great repute formerly to plant for avenues, and arrange on the boundaries of extenſive lawns, and other ſpacious open ſpaces, as well as to diſperſe in parks, &c. both as detached ſingle objects, and in groups, alſo to plant for ſhade; and in all of which ſuffered to grow rural, and diſplay their beautiful conic heads: they were likewiſe uſed for forming ornamental hedge-rows in large gardens, and along near the fronts of houſes by road ſides, &c. and trained regular by clipping them annually once or twice in ſummer; and were alſo often trained in regular cones, pyramids, hemiſpheres, arches, &c. though for the general part they are conſiderably better calculated for rural objects, than for any kind of hedge-work, or other regular training, eſpecially as they generally begin to drop their leaves the earlieſt in autumn of any other tree: I ſhould therefore adviſe all the ſorts of Limes to be employed principally only as rural trees, and diſpoſed at ſufficient diſtances to allow them full ſcope to branch out all around, and exhibit their heads diſtinctly; and in which they will always appear conſiderably the moſt conſpicuouſly ornamental.

Though from the circumſtance of theſe trees ſhedding their leaves early in autumn, which is more peculiar to the large than ſmaller leaved kinds, they are not in ſuch general repute to plant for ornament in gardens as formerly, becauſe in very dry hot ſummers the leaves often begin falling in July or Auguſt,

guſt, and cauſe a continual litter for a long time.

However, for the ſingularity of their handſome growth, and foliage, they highly demand culture both for variety, ornament, and ſhade; and if principally the red-twigged ſort is planted, they will have an agreeable effect, even in winter, when entirely devoid of leaves.

Theſe trees are likewiſe proper to plant as foreſt-trees, as they will ſoon arrive to timber; and the wood being ſoft and tough, is valued for making many ſorts of houſhold utenſils, and for various light purpoſes in carved and turnery works, as before noticed.

For all of whieh purpoſes, theſe trees may be planted almoſt any where, as they will proſper in any common ſoil and expoſure; are raiſed in abundance, in all the nurſeries, for ſale, and may be tranſplanted any time in open weather, from October till March.

*Method of Propagation, &c.*

The propagation of theſe trees is by ſeed, by layers, and by cuttings.

By Seed.—This ripens abundantly in October, which may be beaten down with a long pole, keeping the green-twigged and red-twigged ſorts ſeparate; and may either be ſowed ſoon after, or preſerved in ſand till ſpring; ſowing them in a bed or border of common earth, previouſly digging the ground, and divide it into four-feet wide beds; then draw the earth off the ſurface evenly, about an inch deep, into the alleys; and then ſow the ſeeds thinly, and touch them lightly down into the earth with the back of the ſpade; which done, directly earth them over, the depth juſt mentioned, which finiſhes the work of ſowing.

Being thus ſowed, they will all come up freely in the ſpring; at which time be careful to keep the beds clean from weeds, and give ſome moderate waterings in dry weather, to forward the plants in growth as much as poſſible, fit for planting out in nurſery-rows by autumn following; though if they have ſhot rather weakly, let them ſtand another year: then planted out in rows two feet and a half aſunder, by eighteen inches diſtance in the lines; here to remain three or four years or more to acquire due ſize to tranſplant for the purpoſes intended, trimming off large ſide-branches from the lower part of the ſtem occaſionally, to encourage their aſpiring more expeditiouſly at top, which muſt be always ſuffered to remain entire.

Theſe trees, when raiſed from ſeed, generally in the end aſſume a more handſome and expeditious growth, than ſuch as are raiſed from layers and cuttings.

When they are from about five or ſix to eight or ten feet high, they are of proper ſize for final tranſplantation: though if any are deſigned principally as foreſt-trees for timber, it is adviſeable to tranſplant them finally in their deſtined places, while they are young, and not more than from two or three to five or ſix feet high.

By Layers.—All the ſorts grow freely by this method: and is alſo, or by Cuttings, a very certain method to continue the varieties.—For the purpoſe of furniſhing layers, proper ſtools muſt be prepared (ſee STOOLS), and the young ſhoots of a year or two old, are the proper parts to lay; which ſhould be performed in autumn or winter, by ſlit-laying, ſhortening the tops of each layer within a little of the ground: they will all be well rooted by autumn following, and moſtly fit to plant out in the nurſery in rows, and there managed as the ſeedling Limes juſt above directed.

By Cuttings.—Cuttings of all the ſorts of Limes will grow, though not near ſo readily as layers: however, when cuttings are intended, chuſe the ſtrong young ſhoots of the year, in autumn or ſpring, and plant them in a moiſt good ſoil; or any ſcarce ſorts may be planted ſeveral together in pots, and plunged in a hot-bed; they will more readily ſtrike root.

TOLUIFERA.

Balſam of Tolu Tree.

It is a large tree of South America, retained here in ſtoves by the curious for variety; is adorned with large winged leaves, and bunches of pentapetalous flowers.

Claſs and order, *Decandria·Monogynia.*

*Characters.*] CALIX is monophyllous, bell-ſhaped, and quinquedented at top.—COROLLA, five petals, four of them being linear and equal, but the fifth is twice as large as the others, and nearly heart-ſhaped.—STAMINA, ten very ſhort filaments, having antheræ longer than the calix.—PISTILLUM, an

an oblong germen, very ſhort ſtyle, crowned with an acute ſtigma.—PERICARPIUM and SEMEN, at preſent undeſcribed.

There is but one ſpecies, viz.

TOLUIFERA *Balſamum.*

*Balſam of Tolu Tree.*] Riſes with a ſtrong robuſt trunk, branching numerouſly and ſpreading, thirty or forty feet high, covered with a thick tough brown bark, large pinnated leaves, compoſed of ſeveral pair of oblong oval lobes, terminated by an odd one; and at the axillas ſmall bunches of yellow flowers, having ſmaller petals, and one large.

It grows naturally in the Spaniſh Weſt Indies, and in this country muſt be cultivated in pots, and placed always in the ſtove, and managed as other tree and ſhrub exotics of that department.

A balſam of great virtue is extracted from this tree, and is much uſed in medical compoſitions.

This tree is raiſed from ſeeds obtained from abroad by the ſeedſmen; which ſhould be ſowed as ſoon as they arrive in pots of light earth, and plunged in the bark-bed; and when the plants are come three or four inches high, pot them off ſeparately, giving water, and plunge them again in the bark-bed; and afterwards managed as directed for other woody exotics of the ſtove. See STOVE PLANTS.

TOMENTOSE Plants.

Such as are covered with *Tomentum*, being a ſort of woolly or hoary, downy pubeſcence, which covers the ſurface of many plants, more particularly thoſe that inhabit the neighbourhood of the ſea; and many of which plants having their leaves and branches ſo cloſely covered with this ſubſtance as to give them a hoary white appearance.

TOURNEFORTIA.

*Tournefortia.*

Conſiſts of ſeveral ſhrubby exotics from the hot parts of America, and cultivated here in ſtoves for variety; one of which is a climber, the others erect growers, garniſhed moſtly with oval and lanceolate ſimple leaves, and monopetalous infundibuliforme flowers at the ſides and ends of the branches.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX is monophyllous, five-parted, and permanent. — COROLLA is monophyllous, funnel-ſhaped, with a cylindric tube, globular at the baſe, and with a ſpreading brim, cut into five acuminated horizontal ſegments. — STAMINA, five awl-ſhaped filaments in the mouth of the corolla, having acuminated connivent antheræ. —PISTILLUM, a globular germen, ſimple ſtyle, and ſingle ſtigma. — PERICARPIUM, a globoſe berry, having four roundiſh ſeeds.

This genus received the name *Tournefortia* in honour of M. Tournefort, the illuſtrious French Botaniſt.

There are about eight ſpecies in this genus, moſtly of a ſhrubby nature, and perennial in root and top; and the moſt noted ſorts in the Engliſh gardens are the following; all of which being natives of the hot parts of America, require to be continued always in a hot-houſe in this country.

[1] TOURNEFORTIA *Volubilis.*

*Volubilate or Twining Tournefortia.*] Riſes with long, ſlender, woody volubilate ſtalks, twining round any adjacent ſupport, fifteen or twenty feet high; oval, acuminated, ſmooth leaves, on reflexed footſtalks; and ſmall white flowers in looſe ſpikes, at the ſides and ends of the branches.

[2] TOURNEFORTIA *Suffruticoſa.*

*Suffruticoſe or Underſhrubby Tournefortia.*] Riſes with a ſhrubby ſtalk, branching moderately about three or four feet high; oblong, almoſt ſpear-ſhaped, hoary, whitiſh leaves; and ſmall white flowers in bunches, at the ſides and ends of the branches.

[3] TOURNEFORTIA *Serrata.*

*Serrated or Tree Tournefortia.*] Riſes with a ſhrubby, upright, thick ſtem, branching twelve or fourteen feet high, or more; having oval, ſerrated leaves on rough ſpinous foot-ſtalks; and white flowers in recurved ſpikes terminating the branches.

[4] TOURNEFORTIA *fœtidiſſima.*

*Fœtid Tournefortia.*] Riſes with woody ſtalks and branches, eight or ten feet high, or more, having oval, ſpear-ſhaped, hairy leaves; and white flowers terminating the branches in ramoſe, pendulous ſpikes.

[5] TOURNEFORTIA *Cymoſa.*

*Cymoſe Tournefortia.*] Riſes with woody, branching ſtalks, ſix or eight feet high; large, oval, oblongiſh, naked, ſmooth, entire leaves; and white flowers terminating the branches in cymoſe ſpikes.

[6] TOURNEFORTIA *humilis.*

*Dwarf Tournefortia.*] Riſes with ſhrubby, low, ſlender ſtalks, branching moderately two or three feet high, ſpear-ſhaped, cloſe-

ſitting leaves, and white flowers in ſimple or unbranched recurved ſpikes, produced laterally, or along the ſides of the branches.

Theſe plants remain in leaf, moſtly the year round, and flower in ſpring or ſummer, &c. ſucceeded by ſmall ſucculent berries, containing three or four ſeeds.

They being all very tender exotics, that require the continual ſhelter and heat of a ſtove, in this country muſt be cultivated in pots of good earth, and placed in the ſtove accordingly, and treated like other ſhrubby exotics of this collection, as directed under the article STOVE PLANTS.

All the ſorts may be raiſed from ſeeds obtained from abroad, where the plants grow naturally; and it is adviſeable to ſow them as ſoon after their arrival as poſſible, in pots of light mould, and plunged in a bark-bed; giving occaſional ſprinklings of water, and they will probably come up the firſt year; or if they ſhould remain longer in the ground, continue to keep the mould in the pots all the while moderately moiſt; and when the plants are come up, and advanced three or four inches high, prick them out ſingly in ſmall pots, and plunge them in the bark-bed, and continue them conſtantly in the ſtove.

Their propagation may alſo be tried by layers, &c. in pots plunged in the bark-bed.

TRACHELIUM.

Throatwort.

One hardy herbaceous perennial, of the flowery tribe, for the pleaſure-ground, compoſe this genus; riſing half a yard high, with oval leaves, and umbelliferous-like blue flowers at top.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX is ſmall, five-parted, and placed above the germen.—COROLLA, one funnel-ſhaped petal, with a long, ſlender, cylindric tube; and divided at the brim into five ſmall concave ſpreading ſegments.—STAMINA, five capillary filaments, the length of the corolla, having ſingle antheræ.—PISTILLUM, a triquetrous, ſubrotundous germen, ſlender ſtyle, and globoſe ſtigma.——PERICARPIUM, a roundiſh, obtuſe, trilobate, trivalvous capſule, of one cell, having numerous ſmall ſeeds.

There is but one ſpecies, viz.

TRACHELIUM *Cæruleum.*

*Blue Trachelium or Throatwort.*] Hath a thick, fleſhy, fibrated, perennial root; upright ſtalks, about half a yard high; garniſhed with oval, ſpear-ſhaped, ſerrated leaves, and terminated by many ſmall fine blue flowers, in a ſort of umbellate cluſters in June and July, ripening ſeeds in September.

It is a native of ſhady places in Italy and the Eaſt, and is cultivated in our gardens to encreaſe the variety; planted in light dry ſoils, where it will abide ſeveral years: alſo, if ſowed in the crevices of old walls, ruins, and rock-work, they will flouriſh, and be of great duration; but when cultivated in rich moiſt ſoils, they are not ſo durable, often proving biennial.

It is propogated by ſeeds ſowed in autumn, ſoon after they are ripe, or early in ſpring, in a bed or border of light earth; the autumn ſowing will probably come up more freely than that of the ſpring. Obſerving when the plants are two or three inches, prick them in nurſery-rows ſix inches aſunder, to remain till autumn; then may be tranſplanted where they are to remain.

TRADESCANTIA.

Virginia Spiderwort, or Flower of a Day.

It is a hardy herbaceous perennial, of the flowery collection, for adorning the pleaſure-garden; riſing with erect annual ſtalks, a moderate height, ornamented with very long narrow leaves, and tripetalous flowers.

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX, three oval, concave, ſpreading, permanent leaves.—COROLLA, three large, orbicular, plane, ſpreading petals.—STAMINA, ſix ſlender, erect, hairy filaments, having kidney-ſhaped antheræ.—PISTILLUM, an oval, obtuſely-trigonous germen, filiformous ſtyle, crowned with a trigonal obtuſe ſtigma.—PERICARPIUM, an oval, trivalvous, trilocular capſule, covered with the calix, having numerous ſmall ſeeds.

There are three ſpecies, but not more than one in the Engliſh gardens, viz. *Common Virginia Spiderwort*; comprehending ſeveral varieties, all hardy perennials.

TRADESCANTIA *Virginiana.*

*Virginian Tradeſcantia, commonly called Virginia Spiderwort, or Flower of a Day.*] Hath a thick root, furniſhed with many fleſhy fibres, crowned with many narrow leaves near two feet long; amidſt them erect, thick, ſmooth ſtalks, two or three feet high; garniſhed, long, graminous leaves ſingly; and large tripetalous,

ous, blue, and other coloured flowers in the varieties, crowning the ſtalks in cloſe cluſters.

*Varieties are*] Common pale blue-flowered. Deep blue flowered—Purple-flowered—Red-flowered—White-flowered.

They all flower in June; each flower is generally but of one day's duration; hence the name *Flower of a Day*, but the ſame plant continues producing a plentiful ſucceſſion of new flowers every morning, for a month or ſix weeks, ſucceeded by plenty of ripe ſeed in autumn.

This ſpecies, &c. is a native of Virginia, but have been many years in the European gardens as ornamental flowery plants, for the common borders; they may therefore be planted in any of the borders, or other compartments of the pleaſure-ground, on which they will abide by the roots many years, producing new ſtalks annually in ſpring, and flower very ornamentally every ſummer; and will multiply exceedingly both by their roots, and ſcattered or ſelf-ſowed ſeeds; even ſo much as often to over-run the ground, and require trimming in to reduce them within proper bounds.

They are all eaſily propagated by parting the roots in autumn, or early in ſpring; alſo by ſeed ſowed in the ſpring, in any bed or border of common earth, and raked in; and the plants will riſe plentifully, and be fit to prick out in ſummer, to gain ſtrength till autumn, then tranſplanted finally.

## TRAGOPOGON.

Goat's Beard.

Conſiſts of hardy, herbaceous plants, moſtly biennials, the principal of which in the gardens is an eſculent called *Salſafy*, eſteemed for its carrot-ſhaped, eatable root, and by ſome for the tender ſhoots of its young ſtalks in the ſpring, to eat like *aſparagus*; are moſtly tap-rooted plants, with the roots crowned with long narrow leaves, and with upright ſtalks in ſpring, of moderate height, ſurmounted by large compound flowers.

Claſs and order, *Syngeneſia Polygamia Æqualis*.

*Characters.*] CALIX, a compound flower having the general cup ſingle, compoſed of eight ſpear-ſhaped leaves, alternately larger and joined at the baſe.—COROLLA, the general flower is compound, imbricated, and uniform, compoſed of many monopetalous tongue-ſhaped hermaphrodite florets, five-parted at top.—STAMINA five very ſhort filaments, having cylindric antheræ.—PISTILLUM, an oblong germen filiforme ſtyle, crowned with two revolute ſtigmas.—PERICARPIUM, none, the ſeeds, one in each floret are angular, rough, crowned with down, and lodge in the ſwoln connivent calix.

From the circumſtance of the ſeed being covered with a pappus or down as they remain in the cell, reſembling a goat's beard, it obtained the name of *Tragopogon*, or Goat's Beard.

There are ten or twelve ſpecies, but many of which being plants of no eſtimation for uſe, are but little known; and the moſt noted ſorts are, firſt the ſalſafy, an eſculent, having an eatable root and ſtalks, &c. and two others ſorts principally for variety: the firſt two ſorts are biennials and the third a perennial.

[1] TRAGOPOGON *Porrifolium (Biennial)*

*Leek-leaved Tragopogon, commonly called Salſafy.*] Hath a perpendicular, carrot-ſhaped, white, eatable root, a foot or more long, crowned with many long leek-ſhaped entire leaves, cloſely gathered; and when it runs to ſeed, riſes with upright, hollow, ſmooth, whitiſh ſtalks two feet high, terminated with large compound blue flowers, having the peduncles thickeſt above, and the calix longer than the radius.

It flowers in July, and the ſeeds ripen in autumn, then wholly decays.

This plant grows naturally in meadows in ſome parts of England, &c. but is cultivated in gardens in the manner of carrots, for its long carrot-ſhaped root, which attains a moderately large ſize by autumn and winter, when it is boiled for uſe, and ſerved to table in different ways, and is very tender and palatable: alſo the young ſhoots of the flower-ſtalk in ſpring and ſummer, cut while young and tender, when only a few inches high, are dreſſed in the manner of aſparagus, and ſerved up to table with butter, &c.

It being a biennial, riſes from ſeed in the ſpring, and attains perfection in the root in autumn following, remaining good all winter, and in ſpring after ſhoots up ſtalks for flower and ſeed, and the root then becomes ſticky and uſeleſs, and totally periſhes ſoon after the ſeeds are ripe.

[2] TRAGOPOGON *Pratenſe (Biennial.)*

*Meadow Tragopogon, or Greater Yellow Goat's Beard.*] Hath a taper fibrated root, crowned with very long, narrow, acute, entire leaves gathered together; upright ſtalks near a yard high, garniſhed with long narrow leaves ſingly at each joint; and terminated each ſtalk with one large compound yellow flower, having the calix and radius of equal length.

*Variety.*] Smaller Meadow Tragopogon, having much narrower leaves, and ſtalks only a foot high.

Both the varieties flower in June and July, and the ſeeds ripen in September.

They grow naturally in meadows in England and moſt part of Europe; and are ſometimes cultivated in gardens for variety, and the young ſhoots in ſpring are often gathered and dreſſed, as obſerved of the Salſafy, being frequently brought to the London markets by the ſimplers who gather them in the meadows in April and May; or may be raiſed in gardens by ſowing their ſeed in ſpring in rows ſix or eight inches aſunder, and the plants will ſhoot up for uſe in the ſpring following.

[3] TRAGOPOGON *Dalechampii (Perennial.)*

*Dalechamp's Greater Hawkweed, or French Tragopogon.*] Hath the root crowned with many large, oblong, runcinated, deeply indented leaves; low ſtalks only about five or ſix inches high, ſurmounted by one large yellow flower, having a monophyllous calix ſhorter than the corolla, appearing in June or July, and the ſeeds ripen in autumn.

All theſe plants are hardy: the firſt two being biennials, riſing one year from ſeed and the next ſhoot up into ſtalk, producing flowers and ſeed, then wholly decay; and the third is a perennial, durable in root, ſending up ſtalks annually in ſpring, which decay in autumn.

The firſt ſpecies *(Tragopogon Porrifolium)* is the principal ſort for general culture, as an eſculent, and as ſuch merits culture in every kitchen-garden principally for its roots, as before obſerved, chiefly for autumn and winter uſe; they being eaſily raiſed from ſeed in the open quarters, and will arrive to perfection only in autumn, and continue good till they begin to ſhoot in ſpring following.

It is much cultivated in the London kitchen-gardens for market, where it it commonly brought in bunches, in autumn and winter.

The other two ſpecies are retained in ſome gardens for variety, and the ſecond ſort particularly, is alſo ſometimes cultivated for its tender ſhoots in ſpring, as already hinted.

*Method of Propagation, &c.*

The *Salſafy* is raiſed only from ſeed ſowed in ſpring, in March and April, in an open ſituation to remain, ſowing it either broadcaſt and raked in, or in ſhallow drills, eight or nine inches aſunder, ſcattering the ſeeds thinly, and cover them half an each deep; and when the plants are come up two or three inches high, thin and weed them by hand or hoe, leaving them eight or ten inches aſunder, repeating the weeding as may be required during the ſummer, which is all the culture they require; and they will have large roots by September or October. When you may begin taking them up for uſe; and in November, when the leaves begin to decay, a quantity, may be taken up and preſerved in ſand for uſe in time of ſevere froſt, when thoſe in the ground cannot be digged up.

In ſpring, when thoſe remaining in the ground begin to ſhoot, the ſhoots, when a few inches high, may be cut for uſe as before mentioned; which, when quite young and tender, are excellent eating. Suffer, however, always a few plants to run up to ſtalk every ſpring, to produce ſeed for ſowing.

The other two ſorts may be raiſed alſo from ſeed like the *Salſafy*, and the plants, when a little advanced in growth, may be planted out if they are required for variety in any particular part. If the *Tragopogon Pratenſe* is required for its ſhoots, it ſhould remain where ſowed, and thinned to proper diſtances.

But the third ſort may alſo be propagated by parting the roots in autumn or ſpring.

TRAINED TREES.

For walls and eſpaliers.

The appellation of Trained Trees, is to be underſtood principally of young fruit-trees deſigned for walls and eſpaliers, being trained in the nurſery to the intended form, by planting them againſt any kind of walls, pales, reed-hedge, or other cloſe fence, when a year old from the grafting or budding, training

ing them in the manner of wall or eſpalier trees, for two, three, or more years, till they obtain a good ſpread of branches, arrived to a fruitful ſtate, in order that any perſons, being in haſte to have their walls or eſpalier covered at once with bearing trees, it may be effected in one ſeaſon; as the trees thus trained in the nurſery, &c. being tranſplanted in autumn or ſpring to the places intended, they will both cover the wall or eſpalier conſiderably at once, and bear a great deal of fruit the enſuing ſummer, if a favourable fruit ſeaſon.

So that whoſoever may incline to have his walls thus at once furniſhed with bearing trees, without waiting three or four years longer for younger trees attaining a bearing ſtate, may be ſupplied with ſuch at all the public nurſeries, where large quantities are always ready trained for ſale, more particularly peaches, nectarines, and apricots for walls; likewiſe in many places, cherries and plums, &c. alſo apples, pears, and other fruit-trees for eſpaliers; and are very eligible both to furniſh the walls of any new garden, or newly erected walls in old ones, either wholly or in part, to bear ſome fruit till younger trees, planted untrained, come forward and become fruitful, or may be uſed occaſionally to ſupply the place of very old trees that may happen to fail or bear bad fruit; in all of which, the planting of Trained fruitful trees may prove ſo far preferable to quite young untrained and unfruitful ones planted at the ſame time, in that there will be three or four years difference in the time of their bearing, which is very a material object of conſideration; and that, if the Trained Trees are purchaſed in the public nurſery gardens, you are freed from the trouble of firſt training them to the requiſite form, which requires particular attention the two firſt years, the effecting of which, often ruins many young wall and eſpalier trees at firſt ſetting off, when under the hands of ignorant practitioners; and as to the expence of the purchaſe, between Trained bearing Trees of five or ſix ſhillings, and that of one or two years old untrained ones, of a ſhilling or eighteen pence, cannot be any great object to perſons of fortune, or of any tolerable circumſtances in life, at leaſt to furniſh ſome part of the beſt walls, or to plant alternately with young untrained trees.

Therefore in both public and private nurſeries, it is of much importance to have ſome of the beſt ſorts of wall and eſpalier trees always in training for walls, &c. againſt any kind of fence, either walling, paling, or reed-hedges, both dwarf and half-ſtandard wall trees; alſo againſt ranges of ſtakes in the open quarters for eſpaliers, that there may always be ſome well trained ſpreading trees arrived to a fruitful ſtate, to furniſh any place as above occaſionally with immediate bearing trees of ſome conſiderable ſpreading growth.

When, therefore, it is intended to raiſe trained fruit-trees for walls and eſpaliers, a quantity of the beſt young plants of the reſpective ſorts, both dwarf and half ſtandards aforeſaid, of one year old, with the firſt ſhoots from the budding and grafting entire ſhould be tranſplanted in autumn againſt any kind of fence of any aſpect in a free ſituation, not leſs than four or five feet high; either a wall, paling, reed-fence, &c. before hinted, placing them eight or ten feet diſtance, and here to remain for training as below.

The trees being thus planted, then in ſpring following, juſt as they begin to make an effort for ſhooting, they ſhould be headed down, that is the firſt ſhoots from the budding, &c. to be cut down to within three or four eyes or buds of its origin, or place of inſertion in the ſtock, eſpecially thoſe intended for dwarfs, alſo the half-ſtandards, if worked on tall ſtocks; and this heading down both prevents their running up too high with a ſingle naked ſtem, branchleſs below, and cauſes them to throw out lateral ſhoots from the lower part to fill the wall or eſpalier regularly with branches quite from the bottom upward; for being thus cut over low, they will ſoon after puſh forth ſtrong ſhoots from all the remaining lower buds, ſufficient to give the tree its firſt proper formation as a wall tree, &c. which ſhoots when of due length in ſummer, ſhould be trained along to the fence equally to the right and left, in a ſomewhat inclinated poſition at full length till next ſpring, when theſe ſhoots may alſo be cut down to ſix or eight inches length, to force out a further ſupply of more branches near the bottom, for there is nothing like being well furniſhed with

with branches below at firſt ſetting off, to form a good foundation, whereby you will be able to keep every part of the wall from the very bottom to top covered with bearing wood, for no part of a good wall ſhould be loſt.

So that agreeable to theſe hints, continue ſhortening more or leſs the two or three firſt ſprings on the laſt ſummers ſhoots, as you ſhall ſee neceſſary, in order to obtain a proper ſpread of lower branches to give the tree its intended form; though this work of pruning ſhort to obtain laterals may alſo be performed occaſionally in ſummer, in May or early in June on the ſtrong young ſhoots of the year, cutting or pinching them down to a few eyes, and they will thereby throw out lower laterals the ſame ſeaſon, and by that means a year's growth is gained.

According as the ſupply of branches thus gained by the above methods arrive to proper length in ſummer for training in, they ſhould be accordingly all trained along cloſe to the wall, and if any fore-right or back ſhoots come out, rub them all off cloſe; leaving, however, all the well-placed ſide ſhoots in every part, and let the whole, or as many as poſſible, be trained in during this ſeaſon, to have a plenty to chuſe from in the general pruning ſeaſon of winter or ſpring, training them cloſe to the wall, &c. equally to the right and left, as aforeſaid, on each ſide of the tree, in a ſpreading ſomewhat horizontal manner, no where croſſing one another but at parallel diſtances, and moſtly all at full length during the ſummer's growth; thus to remain till the general winter or ſpring pruning.

In the winter pruning we are to obſerve, that if more wood was trained up in ſummer than now appears neceſſary, or that can be trained in with due regularity, ſhould retrench ſuch ſuperfluities; likewiſe any remaining fore-right or back ſhoots and other irregular growths omitted in ſummer, not eligibly ſituated for training in, ſhould alſo be now all pruned out, cutting every thing of the above nature, both ſuperabundancies and irregularities, quite cloſe to their origin; being careful, however, to leave all the regular, well-placed, uſeful ſhoots that can readily trained with due regularity, without crowding or croſſing one another, all of which ſhould alſo be cleared from all lateral or ſide ſhoots, if any; and with reſpect to their being ſhortened more or leſs, or left entire, you will order according to your diſcretion, agreeable to the afore-mentioned hints, and alſo as noticed below, as the different ſorts may require; though if any rambler extend conſiderably beyond all the others, it muſt be reduced, or cut down to ſome lower ſhoot, conſiſtent with the general form and extent of the reſt of the branches; then, after performing theſe regulations, proceed to the training and nailing in the whole cloſe to wall, &c. in exact order, by ranging them equally each way, in a ſpreading fanned manner, all as ſtraight as poſſible, ſomewhat horizontally, no where croſſing the branches, but all ranged parallel as aforeſaid, one above another, four, five, or ſix inches diſtance, according to the ſorts, making the oppoſite branches of each ſide range as equally as poſſible in the ſame poſition.

Thus, after having obtained a regular ſpread of branches, proceeding immediately near the head of the ſtem, ſufficient to effect the proper expanſion requiſite to form a trained wall or eſpalier tree, they muſt then be pruned according to the method peculiar to each reſpective ſort of fruit, as directed in their culture, each under its proper genus. —Some requiring the branches ſhortened annually, others to be trained moſtly always at full length.

For in the general courſe of training and pruning wall trees and eſpaliers, it muſt be obſerved, that ſome ſort of wall trees require almoſt a general ſhortening every year of the annual ſupply of branches, ſuch as peaches, nectarines, and apricots, which always bear their fruit principally on the young year old wood, have that of each year ſhortened in the winter pruning, to force out a ſufficient ſupply of ſucceſſion ſhoots in proper places all over the tree for the future year's bearing: on the other hand, as apples, pears, plums, and cherries do not want an annual renewal of bearing wood, the ſame branches continue bearing from two or three to many years old; ſo that, after undergoing the operation of ſhortening the firſt two years wood, to obtain a ſpread of lower branches to effect the intended form as a wall or eſpalier tree, they are not afterwards, in the general courſe of pruning, to be ſhortened, but generally always trained at full length, except occaſionally

ſionally ſhortening ſome particular young ſhoot to fill a vacancy. See each kind under its reſpective head, alſo the article of PRUNING *Dwarf Trees, Eſpaliers*, &c.

The training of eſpalier trees is effected exactly in the manner as above, only theſe may be alſo trained as they ſtand in the nurſery lines, in the open quarters or borders, &c. by ranging ſome ſtout ſtakes in the ground along one ſide of each tree, not in a continued ſtraight range immediately the way of the row, but thoſe of each tree ranged ſeparate and obliquely, ſomewhat croſs ways the row as it were, that the branches of the different trees may range beſide one another, and thereby have more room to extend the branches both ways, than the common diſtance in the nurſery-lines would admit, if ranged directly the way of the row.

Obſerve that as it may ſometimes happen ſome of the trained trees, both of the wall and eſpalier kinds, in the courſe of training, may aſſume a ſtate of vigorous luxuriant growth, either in general, or in ſome particular parts, producing ſtrong, rampant, rude ſhoots of a very unfruitful-like nature; they in ſuch caſes, ſhould be ordered accordingly in a peculiar manner, till they have exhauſted their redundancy of ſap, or exceſſive luxuriancy, and effect a more moderate ſtate of growth.

That, therefore, where a general luxuriancy prevails, while under the courſe of training or after, it is adviſeable in the work of pruning to uſe the knife with moderation, in regard to thinning and ſhortening, and rather humour the trees ſomewhat, according to their natural tendency, by leaving the ſhoots and branches thicker or cloſer together than the common rule, and to ſuch as are uſually ſhortened, as in peaches, nectarines, &c. they ſhould be ſhortened much leſs in proportion; that by dividing the ſap amongſt a greater number, as well as larger extent of branches, it checks the luxuriancy which would take place in a ſmaller number and leſs extent of growth. For the more wood we cut out of a generally vigorous ſhooting tree, and the more the ſhoots are ſhortened, as often erroneouſly practiſed, the more vigorous will it continue to ſhoot without ever becoming properly fruitful; and if ſevere cutting is repeatedly continued, the tree often exhauſts itſelf ſo greatly by luxuriant ſhooting, that it ſuddenly aſſumes a weak conſumptive ſtate.

But that the natural inclination of very vigorous young trees, being ſomewhat indulged at firſt by training as many branches as can be conveniently laid in, and thoſe that require ſhortening, cut but moderately, or ſome very luxuriant ones hardly at all; which being practiſed two or three years with diſcretion, it will gradually reduce the trees to a moderate growth, and good ſtate of bearing; when they may be ordered in the common way peculiar to the different ſorts.

On the other hand, ſuch trees as are vigorous only in particular ſhoots, may, in ſome caſes, have ſuch ſhoots radically retrenched, and in others reſerved; that if a very vigorous ſhoot runs conſiderably ſtronger than all the reſt, and ſeems to ſupport its vigour at the expence of the others in its neighbourhood, it ſhould be retrenched to the very origin, as early in the ſummer as diſcoverable; in other caſes, if a luxuriant ſhoot ariſe in any vacant ſpace, towards the bottom eſpecially, where a ſupply of more wood is wanted, it may be retained, and pinched or topped down to a few eyes in May or June, it will ſend out ſeveral laterals below, the ſame ſeaſon, and inſtead of one rude luxurious ſhoot, there will be four or five of moderate growth to fill the vacancy, more effectually, and that will much ſooner attain to fruitfulneſs.

Thus far is chiefly all we have to obſerve relative to the ordering of Trained wall and eſpalier Trees in the nurſery, which being in training from three to four or five years, they obtain a handſome ſpread of fruitful branches, fanned in the requiſite regular form for the purpoſes intended; ſo as when planted in the garden, they at once cover a large ſpace of walling, &c. bearing good fruit the following ſummer.

Other particulars reſpecting their culture, after being planted in their deſtined places in the garden, are exhibited under the heads ſeparately of the reſpective ſorts. See alſo DWARF TREES, ESPALIERS, and PRUNING.

Notwithſtanding what we have here advanced reſpecting the planting of Trained Trees for walls, &c. we would alſo obſerve, that

that for any general plantation, unleſs good Trained Trees can be readily obtained, from three or four to five or ſix years old, of a clear free growth, it will be better to plant entire young trees of one or two years old, immediately from the nurſery rows untrained, planting them at once where they are to remain, and they will probably root more effectually, and aſſume a freer growth than ſtunted Trained Trees, managing them as directed for the Trained Trees, to give them the due formation, and afterwards, agreeable to the rules of pruning directed for the different ſorts in their proper places.

But ſome, to have as great a chance as poſſible, plant both young untrained trees to remain, and Trained Trees of a bearing ſtate, dwarfs and half-ſtandards between, ſo as to cover the wall more effectually at once, and furniſh a ſupply of fruit directly, as it were, and until the young ones are trained and arrive to bearing; then as they advance in growth, and if they appear the moſt thriving, the Trained Trees are gradually cut away, leaving the younger, or more thriving trees, to occupy the wall wholly at laſt.

In moſt of the public nurſeries, they raiſe many Trained Trees for ſale, which occupy all their cloſe fences of walls, pales, or reed-hedges, planted near together, and after being in training two, three, four, or more years, till of a good ſpread and become fruitful they are ready for ſale, and fetch a very good price, generally from three to five or ten ſhillings per tree, according to the ſorts, age, and goodneſs of growth; which pays well for the trouble of training, as any ſort of fence of any aſpect, openly expoſed, ſerves for training them to the proper form.

## TREILLAGE,

### Or TRELLIS.

A *Treillage* is ranges of ſtakes and railing on which to train eſpalier trees; alſo occaſionally for wall trees, where the wall does not admit of nailing the branches immediately againſt it; likewiſe for training wall trees in forcing frames, &c. and may be of different degrees of taſte for uſe and ornament, as well as of different dimenſions, from four or five to ſix or ſeven feet high, as noticed below.

For common eſpalier fruit trees in the open ground, a Treillage is abſolutely neceſſary, and may either be formed of common ſtakes or poles, or of regular joinery work.

The cheapeſt, the eaſieſt, and ſooneſt made Treillage for common eſpalier trees, is, that formed with any kind of ſtraight poles or ſtakes of underwood, as cut in the coppices or woods; being cut into proper lengths, of from five to ſix or ſeven feet, may expeditiouſly form a good Treillage, by driving them in the ground in a range a foot diſtance, all of an equal height, and then railed along the top with the ſame kind of poles or rods, to preſerve the whole ſtraight and firm in a regular poſition. See ESPALIER.

Therefore, to form a Treillage of this kind, we muſt provide ſome bundles of ſtraight poles or rods, either of aſh, cheſnut, or of any other firm durable wood; which, if in the country, may be readily obtained in the adjacent woods or coppices, at a moderate expence, and are ſold at many of the timber yards in the vicinity of great towns; chuſing ſuch as are perfectly ſtraight and of ſufficient ſubſtance, i. e. full an inch and half thick, cutting them into ſix or ſeven feet lengths, as before noticed, and having pointed them at one end, drive them with a mallet into the ground in a ſtraight range cloſe along the row of trees, a foot deep at leaſt, and the ſame diſtance in the line; after which ſaw them even at top, all of an equal level from four to five or ſix feet high, then let ſlips of deal or ſtraight poles, be ranged horizontally along the top the whole length, and nailed down to each ſtake, which finiſhes the whole firmly in a ſtraight range, as well as give an air of greater uniformity; and when thus finiſhed, the branches of the eſpalier trees are to be trained and extended along horizontally from ſtake to ſtake, as directed for the different ſorts under their proper heads, and in the article ESPALIER.

To render the above ſort of Treillage ſtill ſtronger, may run two, three, or more ranges of rods, along the back part of the uprights, a foot or eighteen inches aſunder, faſtening them to the upright ſtakes either with pieces of ſtrong wire twiſted two or three times round, or by nailing them.

But where a more elegant and ornamental Treillage is required in any particular diſtrict, it is formed with regularly ſquared poſts and rails of hard timber, neatly plained and framed

framed together; having for this purpoſe deal or oak poſts, uniformly worked two or three inches ſquare; but if the main poſts are of oak, it will be of particular advantage in reſpect to ſtrength and durability, fixing the main poſts in the ground ten or twelve feet aſunder, with ſmaller ones between, ranging the horizontal railing from poſt to poſt in three or more ranges; the firſt being ranged about a foot or eighteen inches from the bottom, one at top, and a third along the middle ſpace, and if thought convenient may range one between each of the intermediate ſpaces; then fix thin ſlips of lath, or the like, upright to the horizontal railing as far as the branches of the trees extend, ten inches or a foot aſunder; and paint the whole white in oil colour, to render it more ornamental and durable; and in training the trees, tie their branches both to the railing of the Treillage, and to the upright laths, according as they extend in length on each ſide.

In either of the above Treillages for an eſpalier, five or ſix feet is generally of ſufficient height, as if much higher, the winds having greater power, will looſen and diſplace them.

Treillages for wall trees is in ſome places neceſſary, where the walls are built with large ſtones with the joints irregular and far aſunder, not affording opportunities for nailing properly in the due regularity required; in which caſe a neat Treillage is eligible, erected all along cloſe to the wall, on which to train and tie the branches in regular order.

This kind of Treillage may alſo be formed with rods or ſtrong laths, erected chequer or lattice faſhion, faſtened and framed together cloſe to the wall with iron hooks and pieces of wire, as below.

That being provided with a due quantity of clean ſtraight rods or poles, or ſquared laths an inch thick, and a quantity of hooked iron holdfaſts, which are previouſly driven into the joints of the wall in rows at regular diſtances, projecting about an inch or inch and half to receive the rods or laths, both horizontally and perpendicularly chequerways nine or ten inches aſunder; fixing the firſt row of holdfaſts towards the top, the ſecond near the bottom, and the third along the middle ſpace; this done, and the rods or laths ready, which, if thought proper, may be ſquared and planed, then proceed to frame the Treillage by firſt fixing the rods horixontally in three rows, in the three ranges of hooks, as above; obſerving, theſe horizontal rods ſhould be previouſly chopped off to nothing at each end, ſo as they may be readily ſpliced to one another to extend them in length as far as required; thus, having fixed up the three firſt rows of horizontal poles, faſten up ſome uprights or ſtandard rods in front of the horizontal ones, five or ſix feet diſtance, then range the remainder of the horizontal laths behind the ſtandards, nine or ten inches aſunder, faſtening them with wire to the uprights, and being all thus placed and fixed, the reſt of the ſtandards are faſtened up in front at the ſame diſtance, and the whole is made faſt with wire twiſted round the hooks and the croſſings or interſection of the rods of the Treillage.

Or a Treillage of the above kind may be formed of ſquared laths, about an inch thick, planed even and ſmooth and neatly framed together by mortiſe and nailing, &c.

When the Treillage in either of theſe methods is finiſhed, it is adviſeable to paint the whole all over with white lead, to render it both more beautiful and durable.

In forcing-frames and ſtoves, where wall trees are intended for forcing, as they are planted both againſt the back wall, and occaſionally againſt the front glaſſes, a Treillage is abſolutely neceſſary, for the trees muſt not be trained cloſe to the wall, &c. therefore, a Treillage ſhould be erected three or four inches from the wall or glaſſes; formed with ſquared poſts and laths, uniformly framed together in the chequer or lattice manner.

TRIBUS.

Tribes of Plants.

As the whole vegetable creation is diſtributed ſyſtematically into claſſes, orders, genera, and ſpecies, &c. according to the ſexual ſyſtem, there are numbers of plants in theſe different artificial arrangements, that although they differ eſſentially in the fructification or ſexual method, yet are nearly allied in their general growth, habit, and appearance; and may, therefore, for the greater facility of diſtinction, agreeable to nature's ſyſtem, be divided into Tribes according to the affinity they bear to one an-

other in their nature of growth, either in general, or particular parts, and their ſenſible qualities, &c.

For example, they may be divided into Tribes according to the following natural orders.

*Herbaceous Tribe.*] All plants of the herbaceous or herb kind, riſing moſtly with leaves immediately from the root, and with ſoft herbaceous ſtalks not becoming woody, but moſtly die at the end of the ſame year they were produced.

*Ligneous or Woody Tribe.*] All trees and ſhrubs having woody durable ſtems and branches.

*Arboraceous Tribe.*] All plants of the tree kind riſing to a lofty ſtature. See ARBOR.

*Fruticoſous or Shrubby Tribe.*] Plants of the ſhrub kind, riſing but a moderate height, and divide low into ſeveral ſtems, &c. branching in a ſomewhat buſhy manner.

*Deciduous Tribe.*] All kind of trees, ſhrubs, and other plants that caſt their leaves in winter.

*Sempervirent or Evergreen Tribe.*] The various trees, ſhrubs, and other plants that retain their green leaves the year round.

*Annual Tribe.*] Annual plants, called annuals, being ſuch as are only of one year's duration. See ANNUAL PLANTS.

*Biennial Tribe.*] Plants of two years duration. See BIENNIAL PLANTS.

*Perennial Tribe.*] Plants that are perennial or of many years duration, and is applicable both to herbs and trees, though more generally applied to herbaceous perennials. See PERENNIS PLANTA.

*Fibrous-rooted Tribe.*] All kind of plants with fibrous roots. See RADIX.

*Bulbous-rooted Tribe.*] Plants with bulbous roots, ſuch as the onion, tulip, lily, &c.

*Tuberous-rooted Tribe.*] Plants with thick, knobbed, fleſhy roots, ſuch as the anemone, potatoe, and Jeruſalem artichoke.

*Succulent Tribe.*] Plants with fleſhy, juicy leaves, as in *ſedum*, *cactus*, *meſembryanthemum*, *aloe*, *agave*, &c. See SUCCULENTIÆ.

*Pinnated Tribe.*] All ſorts of trees and other plants that have pinnated or winged leaves.

*Enſataceous or Sword-leaved Tribe.*] Plants with ſword-ſhaped leaves, as in *iris*, *gladiolus*, &c.

*Spathaceous Tribe.*] Plants producing their flowers out of a ſpatha or ſheath, as in *narciſſus*, *galanthus*, and *amaryllis*, &c. See SPATHACEA.

*Liliaceous Tribe.*] Plants producing flowers with ſix petals or diſtinct ſegments, reſembling a lily in form, ſuch as the tulip, &c. See LILIACEÆ.

*Papilionaceous Tribe.*] Plants that have papilionaceous or butterfly-ſhaped flowers, ſuch as all the pea and bean kind, and all the other leguminous plants. See PAPILIONACEÆ.

*Leguminous Tribe.*] Plants having that kind of ſeed-veſſel called a legumen, legum, or pod, as in all the pea, bean, kidney-bean, and other papilioneous-flowered plants.

*Campanaceous Tribe.*] Plants with campanulated or bell-ſhaped flowers, as the *campanula* and *convolvulus*, &c.

*Rotaceous Tribe.*] Plants with rotated or wheel-ſhaped flowers, as in *lyſimachia*, *anagallis*, &c.

*Umbelliferous Tribe.*] Plants producing their flowers in an umbel, as in *angelica*, *anethum*, *paſtinaca*, &c. See UMBELLA.

*Verticillate Tribe.*] Plants producing their flowers in a verticillus or whorl, as in *thymus*, *hyſſopus*, *meliſſa*, *origanum*, *ſclaria*, *mentha*, &c. See VERTICILLATÆ.

*Aggregate Tribe.*] Plants producing their flowers in an aggregate, conſiſting of numerous ſmall flowers or florets, each having its proper calix, and all collected into a cloſe aggregate head, as in *ſcabioſa*, *ſtatice*, *globularia*, &c. See AGGREGATE.

*Compoſitus or Compound Tribe*] Plants with compound flowers, conſiſting of numerous florets contained in one common calix, as in ſun-flower, marigold, aſter, &c. See COMPOSITUS FLOS.

*Amentaceous Tribe.*] Plants producing their flowers in amentums or catkins, as in *populus*, *corylus*, *fagus*, *betula*, &e. See AMENTACEOUS FLOWERS.

*Coniferous Tribe.*] All trees and plants bearing that kind of fruit called a cone. See CONIFERÆ and CONUS.

*Baccaceous Tribe.*] All berry-bearing plants.

*Pomaceous Tribe.*] Plants bearing fruit of the apple kind *(pomum)* as in the *pyrus malus*, *pyrus communis*, *pyrus cydonia*, *amygdalus*, *prunus*, *meſpilus*, *punica*, &c.

*Nuciferous Tribe.*] All nut-bearing plants.

*Oleraceous Tribe.*] Eſculent or eatable plants for the table, and other domeſtic uſes.

*Lurid*

*Lurid Tribe.*] Plants of an ominous appearance, hurtful or noxious; as in *atropa*, *datura*, *nicotiana*, *ſolanum*, *capſicum*, *digitalis*, &c.

*Graminous Tribe.*] Graſſy plants; all plants of the graſs and corn kind.

TRIFOLIUM.

Trefoil, or clover, &c.

The plants are herbaceous annuals, biennials and perennials, rarely cultivated in gardens, but of great eſtimation for paſture lands as fodder for cattle; have all fibrous roots crowned moſtly with tufts of ſmall trifoliate, or three-lobed leaves, and ſend up ſtalks in ſummer a foot or two high, and ſome trailing; adorned alſo with trifoliate leaves, and terminated by ſmall papilionaceous flowers in heads or ſpikes.

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX, is monophyllous tubular five-parted at top, and permanent.—COROLLA, is papilionaceous, having the vexillum reflexed and with ſhort wings and carina — STAMINA, ten diadelphous filaments, having ſimple antheræ.—PISTILLUM, a nearly oval germen awl-ſhaped ſtyle, crowned by a ſimple ſtigma.—PERICARPIUM, a ſhort univalvular pod, containing a few roundiſh ſeeds.

There are near fifty different ſpecies of *Trifolium*, but many of them being plants, of but little value or eſtimation, either for garden or field culture, are rarely cultivated; ſo that the moſt material ſorts are the following two ſpecies.

[1] TRIFOLIUM *Pratenſe.*

*Meadow Trefoil or Red Dutch Clover.*] Riſes with many ſlender branchy ſtalks near two feet high; having trifoliate leaves of three large folioles, membraneous ſtipulæ placed oppoſite round the foot-ſtalks; and monopetalous reddiſh-purple flowers in hairy ſpikes or tufts, at the ends of the branches, in May and June.

*Varieties.*] Purple-leaved—White flowered, and ſome others.

[2] TRIFOLIUM *repens.*

*Creeping White Dutch Clover.*] Hath trailing, creeping ſtalks, ſpreading and rooting at the joints; trifoliate leaves; and white flowers growing in umbellate heads at the ſides and ends of the branches, ſucceeded by pods having four ſeeds.

Both theſe ſpecies of Trefoil or Clover, are found in abundance in our meadow and paſture grounds, and are the only ſorts of this genus for general culture in laying down graſs-land, and are raiſed from ſeed ſowed in May or autumn as directed below.

They are perennials, though the firſt often proves only biennial, by ſometimes dying away after it has ripened ſeeds, but the ſecond ſort is always biennial, growing very cloſe and thick, is more valuable than the other for continued paſture.

However the firſt ſort, or red Dutch Clover, grows abundantly, producing wonderful great crops, and is moſt excellent for laying down land to cut for fodder for all kinds of cattle for two years; for on account of its biennial nature above-mentioned, it does not always ſucceed well much longer; though if it is cloſe eaten in ſummer, or mowed down when coming into flower, it ſhoots out below from the root again, and often proves ſomewhat perennial; but conſidered as a biennial, the farmers commonly ſow it with barley in the ſpring, and when the barley comes off in July or Auguſt, the Clover ſpreads and covers the ground, and ſhoots up ſtrong early next ſummer, either to feed off, or mow for hay; and after ſtanding two years, they generally plough the ground again for corn.

But the ſecond ſort, creeping white Dutch Clover, is more valuable than the other for laying down ground, deſigned to be continued long in paſture, its ſeeds being mixed and ſowed with graſs; and as it grows low and cloſe, with trailing abiding ſhoots, ſpreading every way and rooting at the joints, it ſoon overſpreads the ground, and forms a cloſe thick ſward, of many years duration; and affords the moſt excellent feed for all ſorts of cattle.

Both the ſorts are propagated by ſeed, which is ſold by all the ſeedſmen, generally at ſo much per pound; and from ſix to eight or ten pounds is the allowance for an acre.

The ſeaſon for ſowing it, is principally in the ſpring in March and April, or may be ſowed in autumn, any time in Auguſt, or early part of September; is generally mixed with graſs ſeeds, and ſowed broad caſt and lightly harrowed in with a ſhort-teethed

harrow, and in a day or two after, when the ſurface is dry, roll the ground with a horſe wooden roller, to break the clods and ſmooth the ſurface, but the farmers commonly ſow theſe ſeeds with corn, ſuch as barley, &c. for the ſake of making the moſt of the land, and when the corn comes off the Clover and graſs take their growth, though it will prove much more proſperous and forward if ſowed alone, as the corn, when very thick and high, is apt to retard its growth, and ſometimes ſpoil the crop.

TRITICUM.

Wheat.

This remarkable genus conſiſts of hardy herbaceous plants, moſtly annuals or biennials, valuable for producing that moſt excellently uſeful grain called Wheat; are fibrous rooted plants, riſing with graſſy leaves and upright, tall, ſlender ſtalks, terminated by cloſe ſpikes of chaffy flowers, ſucceeding to ſpikes or ears of corn.

Claſs and order, *Triandria Digynia.*

*Characters.*] CALIX, is a bivalvous chaff, having the valves oval, obtuſe and concave, containing ſometimes many florets.— COROLLA, is ſmall bivalvous florets, as large as the calix, having the outer valve bellied and pointed and the inner one plane.—STAMINA, three hair-like filaments, with oblong forked antheræ.—PISTILLUM, a turbinated germen, two capillary reflexed ſtyles, and plumoſe ſtigmas—PERICARPIUM none; one oval-oblong ſeed for each floret, obtuſe at both ends, and wrapped up in the corolla.

There are many different ſpecies of Wheat, the principal ſorts of which are,

[1] TRITICUM *hybernum.*

*Winter or Common Brown Wheat.*] Hath long ſpikes or ears, having four florets in each calix; and the grains of corn ranged in four rows, in an imbricated manner, with ſmooth, ventricoſe, or bellied chaff, almoſt without beards or awns.

This is commonly ſowed in autumn to ſtand the winter; hence called Winter Wheat.

[2] TRITICUM *æſtivum.*

*Summer or Spring Wheat.*] Hath ſpikes with bellied ſmooth calixes, ranged imbricatim, containing four flowers each, and are furniſhed with awns.

This ſort is ſometimes ſowed in ſpring, as it ripens much earlier in ſummer than the other.

[3] TRITICUM *turgidum.*

*Turgid or Duck-bill Wheat.*] Hath large thick turgid ſpikes with bellied hairy calixes, placed imbricatim, having four florets each, and moſtly furniſhed with awns.

[4] TRITICUM *Polonicum.*

*Polonium or Poland Wheat.*] Hath long ſpikes with naked calixes, having two flowers in each, which are long, and furniſhed with awns or beards.

[5] TRITICUM *quadratum.*

*Four-rowed Conical Wheat.*] Having oblong conical ſpikes, armed with long awns or beards.

Theſe are the principal ſpecies of Wheat generally cultivated, and which comprehend ſeveral varieties, differing ſomewhat in the form of their ſpikes and chaff, &c.

But the ſort proper to cultivate for general uſe, is principally the Winter or common brown Wheat without awns; though all the ſorts are alſo occaſionally cultivated in different parts of the country.

All the ſorts of Wheat may be conſidered both as annuals and biennials; for conſidered as annuals, that being ſowed in the ſpring, they ſhoot up to ſtalk, and produce ripe corn the ſame year in autumn, and wholly periſh ſoon after; and as biennial, that being ſowed in autumn as practiſed for the Winter, and Turgid Wheat, &c. the plants riſe the ſame year, ſtand all the winter, and ſhoot to ſtalk and corn in ſpring and ſummer following, and totally die in autumn, as ſoon as the corn is ripe.

Theſe plants having ſpreading fibrous roots, they generally riſe with ſeveral ſtalks, eſpecially if they have room to ſpread, in which caſe they often produce from five or ſix to eight or ten ſtalks, each ſtalk terminated by a ſpike of corn.

They ſhoot up into ſtalk in May, and flower in June, conſiſting of numerous chaffy florets, collected into long cloſe ſpikes at top of the ſtalks, each chaff or calix containing two, three, four, or more chaffy florets, and moſtly placed imbricatim or over one another like ſcales of fiſh, all along the ſpike, ſome entirely without awns, and ſome with, either leſs or more, as in their deſcription, and ſucceed to ripe heads of corn in July or Auguſt, fit to reap and ſtack up for uſe.

As to the propagation of Wheat, it is effected by ſeed ſowed every year, principally in autumn, from Auguſt or September until

November

November, the ground being previouſly well ploughed for the reception of the ſeed, allowing generally two or three buſhels to an acre; which for the general part is ſowed broad-caſt and harrowed in, and in ſome places in drills drawn by the drill plough, &c. a foot diſtance or more, which method of ſowing requires a conſiderably leſs quantity of ſeed than the broad-caſt ſowing, and affords opportunity of horſe-hoeing between the rows to kill weeds and ſtir the ſurface of the earth about the plants; which, as having more room generally grow ſtronger and produce a greater number of ſtalks on each root, than ſuch as grow cloſe in the broad-caſt; though as the broad-caſt ſowing is the moſt ready and expeditious method, it is the moſt generally practiſed for ſowing Wheat, and almoſt all ſorts of corn.

TRIUMFETTA.

*Triumfetta.*

Compriſes two tender exotics, a ſhrubby, and an herbaceous plant, natives of the Indies, and retained here in ſtoves for variety; riſe with erect ſtalks ſeveral feet high, adorned with roundiſh leaves, and pentapetalous flowers in ſpikes at the ends and ſides of the branches, ſucceeded by round bur-like capſules.

Claſs and order, *Dodecandria Monogynia.*

*Characters.*] CALIX, five ſpear-ſhaped deciduous leaves.—COROLLA, five linear, concave, retroflexed petals.—STAMINA, twelve or fifteen awl-ſhaped riſing filaments, having ſingle antheræ.—PISTILLUM, a roundiſh germen, a ſingle ſtyle the length of the ſtam na, having a bifid acute ſtigma. — PERICARPIUM, a globular prickly capſule, having four cells, each containing two ſeeds.

There are two ſpecies, one a woody perennial, the other an annual, but the former of which is the ſort commonly kept in the Engliſh gardens.

TRIUMFETTA *Lappula.*

*Lappula, or Jamaica Triumfetta.*] Riſes with an upright woody ſtem, dividing upward into a few branches, and grows five or ſix feet high; roundiſh trilobed-leaves, emarginated at the baſe, and numerous ſmall yellow flowers, collected in ſpikes at the ends of the branches.

It muſt be always kept in pots, and plunged in the bark-bed or the ſtove, and managed like other ligneous plants in the ſtove collection.



It is propagated by ſeed obtained from abroad, ſowing it in a hot-bed, or in pots, and plunged in the bark-bed, where the plants will ſoon come up; which, when advanced one, two, or three inches high, ſhould be planted in pots ſeparately, and placed in the bark-bed of the ſtove to remain.

TROLLIUS, Globe Ranunculus.

Globe Flower or Locker Gowlans.

They are hardy, herbaceous, flowery perennials for adorning the flower garden; have fibrous roots, crowned with divided leaves and upright annual ſtalks, two feet high, terminated at top with large polypetalous globular flowers.

Claſs and order, *Polyandria Polygynia.*

*Characters.*] CALIX, none.—COROLLA, about fourteen nearly oval connivent petals, and nine narrow, incurved, umbilicated nectariums.—STAMINA, numerous briſtly filaments, having erect antheræ.—PISTILLUM, numerous germina, ſitting cloſe in a columnar form; no ſtyle, but the germen crowned by pointed ſtigmas.—PERICARPIUM, numerous capſules collected in a head, each having one ſeed.

There are only two ſpecies, both perennials, one an European plant, the other an Aſiatic exotic, but both hardy enough to grow in the open ground all the year.

[1] TROLLIUS *Europeus.*

*European Globe Flower, or Locker Gowlans.*] Hath a black, fibrous, perennial root; ſending up many roundiſh leaves, deeply cut into five ſegments, which are alſo divided and notched; upright ſtalks, about two feet high, dividing into branches upwards; each terminated by one large globular yellow flower, having the petals connivent or converging together, and the nectaria the length of the ſtamina.

[2] TROLLIUS *Aſiaticus.*

*Aſiatic Globe Flower.*] Hath a fibrous perennial root, crowned with large divided leaves, upright ſtalks, near two feet high, dividing into branches, terminated each with one large ſaffron-coloured flower with ſpreading petals, and the nectaria the length of the corolla.

Both theſe plants flower in May very ornamentally, each flower being large and elegant, compoſed of many large concave petals; which in the firſt ſort particularly, converge

verge or turn inward in a revolute manner, ſo as to give the flower a perfect globular form; hence is called Globe Flower, and is ſucceeded by plenty of ripe ſeed in autumn; but the flower of the ſecond ſpecies *Trollius Aſiaticus*, is not connivent but ſpread out and exhibit the nectariums and ſtamina; alſo of a fine ſaffron-colour, effecting an elegant ſingularity, and is ſometimes ſucceeded by ripe ſeeds in our gardens, and by ſeed both the ſorts may be raiſed, and they alſo multiply exceedingly by the root, which will be of many years duration, and produce flowers annually.

As therefore thoſe plants, when in flower, effect a ſingular variety, they merit a place in every curious collection in the compartments of the pleaſure-ground; and the ſeaſon for planting them is in autumn when the leaves decay, or early in ſpring.

Remarking, however, that as they are natives of moiſt, ſhady, cool places, they are generally the moſt proſperous planted in ſuch ſituations in gardens.

Their propagation is accompliſhed by parting the roots, and occaſionally by ſeed.

By parting the Roots.—Autumn, when the leaves decay, is the beſt ſeaſon to perform it, or early in the ſpring, taking up the roots, and divide them into ſeveral parts, not, however, into two ſmall ſlips, and plant them either where they are to remain, or in nurſery rows for a year; they will grow freely and moſtly flower the ſummer following.

By Seed.—Sow it in a ſomewhat ſhady border in autumn or ſpring in ſhallow drills, and cover it almoſt half an inch deep, they will readily grow and be fit to plant out in ſummer, or towards autumn, in rows half a foot aſunder, to remain ſix or eight weeks to acquire ſtrength, then planted out finally.

TROPÆOLUM.

Indian Graſs, commonly called *Naſturtium.*

Conſiſts of herbaceous annuals or perennials, of very long, trailing, and climbing growth, in eſtimation for effecting variety in the pleaſure-ground in ſummer, but require protection of a green-houſe in winter; grow with long ſtalks trailing many feet along the ground, or upon ſupport, adorned with large roundiſh peltated or ſhield-ſhaped leaves, and numerous pentapetalous flowers all along the branches, of ſingular ſtructure.

Claſs and order, *Octandria Monogynia.*

*Characters.*] CALIX is monophyllous, horned, coloured, divided into five, acute, erect, ſpreading ſegments, and is deciduous.—COROLLA, five roundiſh petals, inſerted into the diviſions of the calix; the two upper ones ſit cloſe, and the three lower ones have oblong ciliated tails or claws.—STAMINA, eight ſhort, declinated, unequal filaments, having erect, oblong, riſing, quadrilocular antheræ.—PISTILLUM, a roundiſh, trilobate, ſtreaked germen, ſingle erect ſtyle, and a trifid, acute ſtigma.—PERICARPIUM, three roundiſh, convex, furrowed berries, having three roundiſh, furrowed ſeeds, with one ſide gibbous, the other angular.

There are only three ſpecies, two of which are common in the Engliſh gardens; conſidered principally as annuals, but if ſheltered in winter in a green-houſe, will prove of a perennial nature, exemplified in the double *Naſturtium.*

The ſpecies are,

1 TROPÆOLUM *minus.*

*Minor or leaſt Naſturtium.*] Hath long trailing ſtalks, branching and extending ſeveral feet along the ground, or upon any ſupport; large, roundiſh, or orbicular peltated entire leaves, of a grey colour, having the foot-ſtalk inſerted into the center; and numerous yellow flowers at the axillas, all along the ſide of the ſtalk and branches; all the flowers having acuminated petals.

*Varieties.*] Pale yellow-flowered—Orange-coloured.

2 TROPÆOLUM *majus.*

*Major or greater Naſturtium.*] Hath large, very long, trailing ſtalks, branching and extending ten or fifteen feet or more along the ground, or on ſupport, garniſhed with large, orbicular, peltated leaves, almoſt indented into five lobes; having the foot-ſtalks inſerted into the center; and numerous large yellow flowers at the axillas, all along the ſides of the branches; with all the flowers having obtuſe petals.

*Varieties*] Pale yellow-flowered. — Orange-coloured flowers. — Double-flowered, commonly called Double Naſturtium, retained generally as a green-houſe plant.

Both theſe ſpecies of *Tropæolum*, and reſpective varieties, flower in great profuſion from June until autumn, or till killed by the froſt; and the flowers are of ſingular form, being, in their ſingle or characteriſtic ſtate, compoſed of five unequal petals, the two upper

upper ones large, and the three lower ones narrow, with long tails joining together, and extended conſiderably behind; but in the Double Naſturtium the petals are multiplied exceedingly, even to the excluſion of the generative organs, and conſequently no ſeed is produced; but in all the common ſingle varieties the flowers are ſucceeded by great plenty of ſeed, contained in roundiſh, berry-like, green fruit. See the *Characters*.

Theſe plants are all hardy enough to grow any where in the full ground all ſummer, until October or November, but are unable to endure the cold in winter.

They are generally deemed annuals, as they riſe from ſeed in the ſpring, attain full perfection, flower, and produce ſeed the ſame year, and totally periſh the enſuing winter, if in the full ground; but if any are raiſed in pots, and removed under ſhelter of a green-houſe, or good garden-frame, under glaſſes, at the approach of cold weather, they will ſtand over the winter, and may thus be preſerved ſeveral years, as practiſed for the double *Naſturtium*; and, like that ſort, be propagated alſo by cuttings, planted in the ſpring; though as they are eaſily raiſed in great abundance from ſeed ſowed in ſpring or ſummer in the full ground, the preſerving them over the winter is rarely attended to, except to a plant or two, by way of variety: and always for the double ſort in particular, as not producing ſeed, nor if it did, would there be any certainty of continuing its doubleneſs by that method, is therefore propagated always by cuttings, and kept in pots to have ſhelter in winter.

All the ſorts are cultivated in gardens, both as flowery plants, and for œconomical uſes in their flowers and ſeed, for ſallads and pickles; conſidered however as ornamental flowery plants, the common ſingle ſorts are diſperſed in patches about the borders, and other compartments, and generally trained up to ſome ſupport, or to run on any kind of treillage, railing, or the ſides of arbors, or to be trained againſt fences, &c. ſowing the ſeeds at once where they are to remain; ſome in patches, as aforeſaid, two or three ſeeds together, near an inch deep; placing tall branchy ſticks, when they come up, for the plants to run upon: others may be ſowed in ſhallow drills, the ſame depth, along any kind of fences, as above, on which alſo to train the plants: and in ſome particular open compartments may ſow ſome to remain as trailers, and extend along the ground, agreeable to their natural growth.—In all of which methods, the ſeeds being ſown any time in ſpring or ſummer, they will grow freely, and the plants will ſoon ſhoot out ſtalks and branches numerouſly, when they ſhould be trained in the order intended, as hinted above.

But as to the double *Naſturtium*, this is always conſidered as a green-houſe plant; for although it will live in the open air all ſummer, like the other varieties, it cannot bear the winter's cold, ſo muſt be kept always in pots of light earth, and placed among the green-houſe exotics, placing ſticks for their ſupport: thus they will remain ever-green, and effect variety very agreeably, and produce abundance of flowers all ſummer and autumn; alſo often moderately in winter; obſerving during the winter to allow them but very little water, as too much moiſture would rot them at this ſeaſon of the year.

Conſidered as œconomical plants, or eſculents, before noticed, the common ſingle varieties of both the ſpecies are often cultivated for their flowers and fruit, the former for ſallads, and the latter to pickle; for the flowers being of a warm, agreeable reliſh, are by many greatly eſteemed to mix in ſallads, alſo as garniſh to ſallads, when ſent to table in form; and are likewiſe in great eſtimation for garniſhing diſhes of meat, &c. and as to the fruit, this, when young and green, is an excellent pickle, and for which purpoſe particularly the plants are cultivated in many gardens.

When therefore it is intended to cultivate theſe plants as eſculents, for the flowers and fruit, they may be ſowed in the kitchen-garden in April or May, either in patches or in ſhallow drills, an inch deep; and when the plants come up, place branchy ſticks for their ſupport, and they will thus ſupply you with abundance of flowers and fruit from June or July until October.

*Method of Propagation, &c.*

The method of propagation is by ſeed annually, for all the common ſingle varieties, ſowing it in ſpring, the end of March, or in April or May, in patches or drills, in the places where the plants are to remain, as above obſerved.

But

But the double *Naſturtium* not producing ſeed, and being only a variety, is propagated by cuttings of its branches, and by which it will always retain its double property: planting the cuttings any time from April until July, in pots of light earth, and placed in the ſhade, giving moderate waterings occaſionally; or thoſe planted early may be plunged in any moderate hot-bed, to facilitate their rooting more effectually.

TROWEL. A Garden Trowel.

A Garden Trowel, made of iron, in a hollow or ſcooped form, is a handy uſeful implement in taking up and tranſplanting numerous ſorts of ſmall plants and bulbous roots; planting in pots; ſowing in patches, &c. and various other ſimilar light works in gardens.

This kind of Trowel being of iron, from twelve to ſix inches long in the plate, and half as broad, hollowed like a ſcoop, and fixed on a ſhort handle, to hold with one hand, proves a moſt convenient handy tool in a variety of garden operations; for being hollowed ſemicircularly, it is remarkably handy in removing many ſorts of ſmall plants with a ball or lump of earth whole about their roots, ſo as not to feel their removal; lifting bulbous flower roots after the flowering is paſt in ſummer; planting bulbs in patches or little clumps about the borders; as alſo for digging ſmall patches in the borders for ſowing hardy annual flower-ſeeds; likewiſe for filling mould into ſmall pots in planting any ſort of plants therein; ſtirring the ſurface of the mould in pots, and freſh earthing them when neceſſary. It is alſo moſt ufeful for filling in earth about plants in hot-beds, and under frames, and any ſmall compartments where a ſpade cannot be readily introduced. And ſuch a Trowel is likewiſe very convenient for pointing over or ſtirring the ground between rows of ſmall cloſe-placed plants in beds or borders, &c. and for many other purpoſes occaſionally.

But to ſuit the ſeveral purpoſes more effectually, it would be proper to be accommodated with two different ſizes of ſcooped Garden Trowels, viz.

A common larger one for general uſe, being about twelve inches long in the plate, and ſix broad, narrowing gradually to the bottom.

A ſmaller one for particular purpoſes about ſix or eight inches in the plate, and four broad, narrowing pretty conſiderably towards the bottom, to introduce between ſmall plants.

They may be had of different ſizes at moſt of the ironmongers where they ſell ſpades; or any common ſmith may eaſily make them.

TRUNCUS, Trunk, the main Stem of trees and plants.

The Trunk riſes immediately from the root, and may be deemed the ſtock or main body of the vegetable, as it multiplies into branches, buds, leaves, flowers, and fruit. See CAULIS.

The Trunk or Stem is of ſeven ſorts, viz.

*Caulis.*—The moſt common ſpecies of Stem, both of trees and herbs, or ſuch as produces and ſupports the leaves, flowers, and fruit. See CAULIS.

*Scapus.*—Is an herbaceous, naked Stem, that elevates the fructification only, and not the leaves, as in *Narciſſus*, *hyacinthus*, &c.

*Culmus.*—A ſtraw or haulm, being the Trunk or Stalk peculiar to the graſſes and corn, bearing both leaves and flowers; and ſometimes flowers and no leaves.

*Frons.*—The Trunk of the palms and fern tribe, being a compound Stem, formed of a branch and leaf blended together, and frequently alſo the flower and fruit.

*Stipes.*—The Trunk or Stem of the muſhroom, and other *fungi*.

*Pedunculus.*—A peduncle, or flowering-ſtalk, riſing ſometimes from the root, but moſtly from the branches, elevating the flowers and fruit, but not the leaves. See PEDUNCULUS.

*Petiolus.*—A leaf-ſtalk bears the leaves only, and not the flowers. See PETIOLUS.

TUBEROUS ROOTS, ſuch as conſiſt of one or more ſwelled or knobbed tubers, of a ſolid fleſhy ſubſtance, as in the turnep, anemone, potatoe, &c.

TUBUS, a Tube or Pipe, being the lower, narrow, hollow part, of a monopetalous flower.

TULIPA. Tulip.

This moſt noted genus furniſhes a grand collection of bulbous-rooted flowery perennials of admirable beauty and elegance, conſiſting of about two or three ſpecies, one of which in particular produces moſt beautiful and ſuperb flowers, and comprehends a prodigious family of varieties, even to the amount of thouſands, having all large bulbous roots, crowned with long, broad, ſpear-

ſhaped leaves, and erect flower-ſtalk, from half a foot to a yard high, terminated with large liliaceous, bell-ſhaped flowers.

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX, none.—COROLLA is bell-ſhaped, and compoſed of ſix large, oblong, oval, concave, erect petals.—STAMINA, ſix ſhortiſh, awl-ſhaped filaments, having oblong, quadrangular, erect antheræ.—PISTILLUM, a large, oblong, trigonal germen, without a ſtyle, and crowned by a triangular three-lobed ſtigma.—PERICARPIUM, a trigonous, trivalved, trilocular capſule, containing many plane or flat ſemicircular ſeeds, reſting upon one another in a double order.

There are three ſpecies, two of which only are known in the Engliſh gardens; and one of theſe in particular (the *firſt ſort*) is famous for the extraordinary beauty of its large noble flowers, moſt elegantly ſtriped and ſtained with a vaſt diverſity of rich colours, in a thouſand various forms; conſtituting ſo many different varieties, all very great ornaments to our gardens in April and May.

1 TULIPA *Geſneriana.*

*Geſner's Turky Tulip of Cappadocia, or common Garden Tulip.*] Hath a large, oblong, tunicated, ſolid, bulbous root, covered with a brown ſkin, ſending up long, oval, ſpear-ſhaped leaves; an upright, round ſtalk, from half a foot to a yard high, garniſhed with a few leaves, and its top crowned with a large bell-ſhaped, erect, hexapetalous flower, of almoſt all colours and variegations in the different varieties.

*Varieties.*] Early Dwarf Tulip *(Præcocea)*, riſing with ſhort ſtalks, from five or ſix inches, to ten or twelve high, with ſmalliſh flowers——Tall late-flowering or common Tulip *(Serotina)* riſing from about half a yard to two or three feet high, with large well-formed flowers—Double Tulip, riſing a foot or two high, or more, having large double flowers—Whole-blowing, or ſelf-coloured Tulip, being all of one original colour, either purples, reds, violets, greys, copper-colours, yellows, &c. which gradually break into numerous variegations.—Variegated Tulip, compriſing innumerable varieties, in reſpect to the different colourings, variegations, and ſtripes.

Each of the above principal varieties of this ſpecies, comprehends numerous intermediate ones, in reſpect to the colours and variegations of the flower; each however is originally all of one colour, eſpecially ſeedings, which, when arrived to a flowering ſtate, each ſeparate flower is either wholly red, purple, violet, grey, brown, black, or yellow, &c. without any variegations or ſtripes, conſiſting of ſelf-coloured flowers, with white bottoms; ſelf-coloured flowers with yellow bottoms; and ſome alſo with blue, purple, and blackiſh bottoms; all of which, whilſt they retain this original ſame colour, are, in the floriſts' language, called *Whole Blowers* or *Breeders*, becauſe each flower is wholly of one ſelf-colour; and the roots being planted a year or two in prepared ſoils, to breed, or diſpoſe them gradually to produce flowers that break from the original ſelf-colour into variegations and ſtripes, in various different forms; and are then called *Breakers*, each different variegation conſtituting a diſtinct variety; conſiſting of flowers with—white bottoms, broken with brown ſtripes, with blue ſtripes, violet ſtripes, roſe ſtripes, red ſtripes, &c. ſeparated by ſtreaks of white and other colours, variouſly diſpoſed.—Yellow bottoms, broken with different reds, crimſons, and golden-yellow flakes, and various other colours.—Some alſo with blackiſh purple bottoms, &c. broken with ſtripes of dark colour, yellow, and tincts of red; ſo that in theſe ſorts of Breakers, or variegated Tulips, with white and yellow bottoms particularly, there are alſo, white and red-ſtriped flowers—white and purple-ſtriped—white and violet-ſtriped—white and roſe-ſtriped—white and brown-ſtriped—violet and white-flaked—red and white-flaked—red and yellow-flaked——brown, yellow, and red-flaked, and numerous other intermediate variegations and ſtripes, variouſly diſpoſed in an endleſs diverſity.

Thus the Breakers or variegated Tulips are diverſified with an infinity of colours in innumerable different ways, forming ſo many different varieties, the principal of which are by the floriſts diſtinguiſhed by pompous names, either of ſome great perſonages, eminent floriſts, places of their original growth, &c. but as vaſt numbers of new varieties are annually obtained from ſeedlings, in ſo many different places, diſtinguiſhed by various new names, and old ones rejected; and often the ſame flower, with a different name

impoſed by different floriſts, it would be impoſſible to give any correct liſt here of the names of ſuch numerous varieties, ſo often changing every where.

[2] TULIPA *Sylveſtris.*

*Wild European Tulip.*] Hath an oblong bulbous root, ſending up long, narrow, ſpear-ſhaped leaves; and a ſlender ſtalk, ſupporting at top a ſmall yellow flower, nodding on one ſide, having acute petals.

Both theſe ſpecies of *Tulipa* are hardy perennials, durable in root, or at leaſt, although the old bulb decays annually, it perpetuates its ſpecies by off-ſets, and is annual in leaf and ſtalk; which riſing from the bulb early in the ſpring, arrives to a flowering ſtate in April and May, each plant having only one flower, ſupported on the top of the naked ſtalk, without any calix or cup, and conſiſts of ſix large petals, three within and three without, moſtly in an erect poſition; the whole together forming a ſort of large cup, either bell, or egg-ſhaped; though the Double Tulip have the petals multiplied in an indeterminate number. All the varieties are ſucceeded by plenty of ripe ſeed in July and Auguſt, contained in an oblong capſule of three cells, having the ſeeds placed on each other in double rows, (ſee the *Characters*); and by the ſeeds numerous new varieties may be raiſed; which however will not attain a flowering ſtate till they are ſeven or eight years old, and after that will require two or three years or more to break into variegations, when the approved varieties may be marked, and encreaſed by off-ſets of the root, as directed in their *Propagation.*

It is remarkable, that although the Tulip may be ſaid to be a perennial plant, yet, after the bulb arrives to a flowering ſtate, the ſame individual old root or bulb does not always remain to flower again, but gradually waſtes away, as may be obſerved by its relics at the lifting ſeaſon; but, however, previous to its diſſolution, it affords from its ſides a ſupply of ſuckers or off-ſet young bulbs, to perpetuate the ſpecies; and one of which being large, and ſimilar to the parent bulb, is capable of flowering equally ſtrong next year; ſo that at the end of many years, what is often ſtill ſuppoſed to be the ſame individual bulb, is in reality another in every reſpect.

Remark, that of the two ſpecies of Tulip, the firſt ſort, *Tulipa Geſneriana*, or common Garden Tulip, and its vaſt train of varieties, is the ſort ſo generally cultivated for the ornament of our gardens, and ſo much admired by all for its great variety and beautiful appearance, grows freely in the open ground in any common ſoil of a garden, and proves a very great decoration to the beds and borders of the pleaſure-ground, for ſix weeks or two months in ſpring, by different plantings of early and late ſorts; planting the principal part in autumn, and the reſt towards Chriſtmas, and in January or February; the autumn plantings will come earlieſt into bloom, and flower the ſtrongeſt; and the others will ſucceed them in flowering; obſerving that in ſummer, when the flowering is paſt, and the leaves and ſtalks aſſume a ſtate of decay, the bulbs of the choiceſt varieties are generally taken up, the off-ſets ſeparated, and the whole cleaned from filth; then put up in the dry till October or November, and then planted again for the future year's bloom.

As to the ſecond ſpecies, *Tulipa Sylveſtris*, it having but little beauty, in compariſon with the others, is not near ſo generally known or cultivated; though it was formerly in eſtimation, before the Turkey Tulip was ſo general; and is ſtill to be ſeen remaining in many old gardens; and it alſo deſerves culture in modern ones, both for its early flowering, and to encreaſe the variety, in concert with the common Tulip, and other ſpring flowers, in the open borders.

However, all the ſorts of Tulips being very hardy perennials, they will proſper in any common ſoil of a garden, and are admirable fine ornaments for adorning the borders and flower-beds; the roots being planted in autumn, the more ordinary ſorts in rows or patches, along the front of borders, and the fine varieties in beds by themſelves, as hinted in the articles *General Obſervation* and *Their general Culture.*

*Arrangement and Merit of the different Varieties.*

As we formerly obſerved, the firſt ſpecies, Common Tulip, &c. is the floriſt's delight, and merits univerſal eſtimation for its vaſt profuſion of beautiful varieties, which may be divided into two principal claſſes, viz.

1. Early or Dwarf Spring Tulips (*Præcocea.*)

2. Late flowering tall Tulips (*Serotina.*)

Remark

Remark however, of theſe two claſſes, that although the firſt claſs (early Tulips) is in great eſtimation for its early bloom and lively colours, yet the ſecond claſs is in ſtill higher repute for its ſtately growth and great diverſity of rich colours, and profuſion of varieties; and is the moſt univerſally cultivated.—See each claſs as below.

*Early Tulips.*——The early Tulips are among floriſts diſtinguiſhed by the appellation of *Præcoces* (early), becauſe they flower early in the ſpring, a month or more before the others; are much ſhorter ſtalked, and the flowers ſmaller; but are in great reputation for their early bloom, and their gay lively colours, both of ſelf-colours, and broken into flaked variegations; ſuch as reds, crimſon, ſcarlet, carnation, violets, purples, yellow, &c. with flowers of each, edged and flaked with red, yellow and white, in many diverſities.

That the bulbs of theſe early ſorts being planted in any good, light, rich earth, in a warm ſituation, in the end of September, or any time in October or November, in yard-wide beds, in rows, ſix or eight inches aſunder, and three or four inches deep, they will riſe early in the ſpring, and arrive to flower in March, continuing till the late Tulips come into flower.

Though as the early dwarf ſorts are well adapted for forcing, they may ſtill be blowed earlier, by either planting the roots in pots or boxes in autumn or winter, and place them in a ſtove, or a hot-bed, whereby they may be forwarded into bloom in January and February, or earlier; and a ſucceſſion continued till the natural ground-bloom arrives; or may place a quantity of bulbs upon phial-glaſſes of water, in autumn or winter, one bulb in each glaſs, and place them either in any warm, light room of a houſe, near the windows, or in a green-houſe or ſtove, by which they will alſo flower very agreeably in winter, and early in ſpring; they being the beſt adapted ſorts of Tulips for all theſe methods of blowing.

They are ſold by the ſeedſmen and nurſerymen in great collections of different ſorts, by names, chiefly Dutch or French, ſuch as the *Duc van Toll*, &c. as may be ſeen in moſt of the flower-catalogues.

*Late-flowering Common Tulips.* —— This claſs is denominated late-flowering, and by the floriſts called *Serotines*, becauſe they blow later in the ſpring, a month or more, than the *Præcoces*, i. e. not coming into flower before the end of April, May, and June; are all of tall growth, ſupporting large flowers, and furniſh an almoſt endleſs variety in the vaſt diverſity of colours, after they break from whole-blowers into variegations and ſtripes, exceeding all others of the Tulip kind in beauty and elegance of flower.

Tulips are alſo ſubdivided into other claſſes, ſuch as Whole Blowers, and broken Tulips.

*Whole Blowers or Breeders.*—Theſe are ſeedling Tulips, having flowers wholly of one colour; they being raiſed from ſeed to a ſtate of flowering, the flowers remain two, three, or more years of one ſelf-colour, before they break into variegations; which are alſo divided into claſſes, according to the Dutch floriſts called,—1. *Bizzares*; being generally almoſt of a brown copper colour, having at the bottom a ſmall round ſpot, either yellowiſh, or black mixed with a little yellow, which when broken into different colours, become *Bizzares* with yellow bottoms.—2. *Violettes*, being either all of a purple-violet, pale-violet, grideline, cherry-crimſon, or red; having the ſpot at bottom, either a clear white, or blackiſh-grey mixed with a little white; and their production when broken into different colours become Tulips with white bottoms, called by the Dutch, *Bybloemens*.

*Broken or Variegated Tulips.*—Such that are broken from the ſelf original colour of the whole-blower or breeding Tulips, into variegations and ſtripes of different colours; obſerving, they generally break into different variegations according to that of the former ſelf-colour; generally however, either wholly expelling the original ſelf-colour of the breeder, or leave but very little remains thereof, which is a deſirable requiſite in theſe kind of flowers among profeſſed floriſts; and when thus broken or variegated with different colours, they exhibit themſelves variouſly mixed, ſtriped, flaked, feathered, marbled, ſpotted, edged, &c. a thouſand different ways in an admirable manner; and are by the floriſts divided into the following claſſes, called by the Dutch

*Baguette primo.*—Tulips with white bottoms, ſtriped with brown, &c.

*Baguette rigaut.*—Tulips with a white bottom, broken with dark-brown ſtripes, &c.

*Bybloemens.*—Tulips with a white bottom, ſtriped with violet and blackiſh brown, &c. —White bottom Tulips ſtriped with roſe-colour, vermilion, and ruby.

*Bizzares.*—Yellow bottom Tulips, ſtriped with various colours.

Among floriſts the principal properties requiſite in the above claſſes of Tulips to conſtitute a fine flower, are—The ſtem muſt be tall, eſpecially of the *Serotines*, from half a yard, to two or three feet high, or more, being proportionably thick and ſtrong; the flower large, compoſed of ſix petals, as in the characteriſtic ſtate, theſe being broad, thick, rounded at top, and ſtand firmly erect without turning much inward or outward, but ſo as to cup well, and give the flower a regular form. The colours and ſtripes of the flower muſt be bright, ariſing unmixed, regularly and diſtinct from the bottom with but little or none of the original ſelf-colour remaining.

The colours in greateſt eſtimation in the broken tulips, are the blacks, golden yellows, purple violets, roſe, and vermilion, each of which being variegated various ways; and ſuch as are ſtriped with three different colours diſtinct and unmixed, with ſtrong regular ſtreaks, with but little or no tinge of the breeder, may be called the moſt perfect Tulips.

Though it is rare to meet with a Tulip poſſeſſing all the properties, yet have ſufficient perfection to render them of high eſtimation as fine flowers.

As to the manner of obtaining this wonderful variety of colours in Tulips, it is often accompliſhed principally by nature alone, which however is ſometimes aſſiſted and forwarded by ſome ſimple operations of art, ſuch as, that in the firſt place, when the ſeedlings bulbs of the whole-blower or breeder are arrived to full ſize, and have flowered once, to tranſplant them into beds of any poor dry barren ſoil, in order that by a defect of nutriment in the earth, the natural luxuriance of the plant may be checked, and cauſe a weakneſs in their general growth, whereby they generally in this weakened or infirm ſtate, gradually change and break out into variegations, ſome the firſt year, others not till the ſecond or third; and according as they are thus broke, they ſhould be planted in beds of good earth, as hereafter hinted.

Another method to aſſiſt nature in effecting the marvellous work of breaking the breeding Tulips into diverſified colours, is to make as great a change as poſſible in the ſoil; if they were this year in a light poor ſoil, plant them the next in a rich garden mould, and another year in a compoſt of different earths and dung; or tranſplant them from one part of the garden to another, or into different gardens, &c. or from one country to another; all of which contributes in aſſiſting nature in producing this deſirable diverſity of colours and variegations.

The double Tulip is alſo a variety of the common Tulip, is very beautiful, though not in ſuch eſtimation among the floriſts as the common ſingle variegated ſorts; not poſſeſſing ſuch a profuſion of variegations in the colours and regularity of ſtripes; they however exhibit an elegantly ornamental appearance, as they riſe with an upright, talliſh, firm ſtem, crowned with a very large double flower compoſed of numerous petals, multiplied in ſeveral ſeries one within another like a double peony, but far more beautiful in their diverſity of colours, variegations, and ſtripes of white and red, or yellow and red, &c. ſo that they highly deſerve culture both in beds alone, near the other ſorts, to increaſe their variety; alſo to plant in patches about the borders, in aſſemblage with the late variegated Tulips, as they blow nearly about the ſame time, i. e. April and May.

### *General Obſervations.*

As we before hinted, all the varieties of Tulips ſucceed in the open ground, in beds or borders of any common garden-earth planted as hereafter directed.

The roots are ſold in full collection, conſiſting of numerous varieties, at moſt of the nurſeries and ſeedſmen's, who both propagate them themſelves by off-ſets and ſeed, and import vaſt quantities annually from Holland; the Dutch being famous for raiſing the grandeſt collections of the fineſt Tulips, and other bulbous flowers, in the greateſt perfection, for the ſupply of almoſt all the other European gardens; diſtinguiſhing every variety

variety in their vaſt collections by ſome pompous name or other, as before obſerved, arranged in regular catalogues; charging prices in proportion to their eſtimation, which formerly was ſo great, among the Hollanders themſelves in particular, that there are accounts of a ſingle root being ſold for from two thouſand to five thouſand five hundred guilders; however they are now more plentiful, and are ſold at from five or ten ſhillings to ſo many pounds, per hundred, and ſometimes conſiderably more for very ſcarce capital ſorts: and the moſt eligible ſeaſon to buy in a collection, is early in autumn; i. e. any time from Auguſt or September, till November.

And as to the ſeaſon for planting them is in autumn; about October and November is the moſt proper period for putting in the main collection, to blow in April and May following; but, in order to have a later bloom by way of ſucceſſion, ſome may be planted in December, January, or February; though they will not flower near ſo ſtrong as thoſe planted in autumn or the early part of winter.

But the early Tulips ſhould generally be allowed a warm, ſheltered, ſunny ſituation, on account of their early riſing and flowering in the ſpring, whilſt the weather remains cold and pinching; generally alſo always kept ſeparate and planted in beds by themſelves, not promiſcuouſly with the late tall Tulips; for as their ſtature and time of flowering are different, they would not diſtinguiſh themſelves to proper advantage: may alſo diſtribute ſome in the fronts of warm borders in patches, in concert with anemonies, ranunculuſſes, &c.

However, as to the late Tulips, or *Serotines*, they may be planted in any of the common beds or borders, as they will be in no danger from any inclemency of weather.

But the fine or more valuable ſorts in general, both early and late kinds, are commonly depoſited all together in beds by themſelves; the early and late kinds in ſeparate beds, in rows eight or nine inches aſunder, that they may exhibit a grand blow together, and that they may be readily defended if neceſſary, eſpecially when in bloom, from heavy rains, and the ſcorching ſun, occaſionally.

Though as to the inferior ſorts, they may be diſtributed about the common borders in patches, three or four roots in each, in which they will have a fine effect when in bloom.

*Their General Culture.*

Having given the foregoing preparatory hints, will now proceed to the general culture of the plants.

Firſt, with regard to ſoil and ſituation, it has already been ſuggeſted, that all the varieties of Tulips will grow very freely in any common light mould that lies dry in winter, generally preferring an open ſunny expoſure; though nothing can hurt a Tulip but too wet ſoils, ſo that if the ſituation of the ground in any place proves naturally low and wet, the beds muſt be raiſed a few inches above the common level; though the floriſts often prepare ſtudied compoſts to form beds for their fineſt Tulips (ſee COMPOSTS.) However, to ſave trouble and expence, they will be found to ſucceed in any good garden-earth; only obſerving it is not adviſeable to plant the fine ſorts particularly, more than one or two years together in the ſame bed or earth, without making ſome alteration in the ſoil, either wholly or in part, by removing ſome of the old, and adding an equal portion of freſh earth, either from any of the kitchen-garden quarters, or any compoſt heap, or elſewhere, that is good: and wheel away the old earth to ſupply the place of the new; and thus by renewing the ſoil leſs or more, the Tulips may be expected always to blow ſtronger and fairer in proportion; though this is only adviſed for the fineſt ſorts that are planted together in beds; thoſe intended to decorate the open borders, may be planted any where as the ſoil happens, and they will alſo flower very well.

But to proceed in preparing the beds for the choicer ſorts, as formerly obſerved: let the ground be well digged one or two ſpades deep, and form the beds three or four feet wide, moderately high in the middle, and of a rounding form, with wide alleys between bed and bed; and rake the ſurface of the bed even, ready for the reception of the bulbs.

Then, when the beds are thus prepared, proceed in a dry day to plant the bulbs or Tulip roots, in rows, either by bedding-in, drilling, or dibble-planting (ſee PLANTING), marking out lines lengthways the bed, eight

or nine inches aſunder, in which plant the roots ſingly, four or five inches deep, and ſix diſtant in the lines; and when they are all thus planted, rake the ſurface of each bed ſmooth.

Thoſe you intend for the open borders, may either be planted in a line a foot from the edge, or diſpoſed in patches or little clumps, three or four roots together, in a patch of ſix or eight inches diameter, ſome patches forward, others more backward to effect a greater diverſity.

After the Tulips are planted, they require no care till the following ſpring and ſummer; as being in no danger from the rigours of winter, they do not want covering; and in ſpring, no more is required than keeping them clean from weeds; except you chuſe to protect the buds of the choicer kinds in the beds, by covering them in cold nights with mats, ſupported on hoop arches, though it is not abſolutely neceſſary; or when the bedded Tulips are come into flower, if you would protect them to preſerve their beauty as long as poſſible, it may be effected by ſhading them from the noon-day ſun, heavy rains, and tempeſtuous winds, with a ſhade or awning of canvaſs or mats erected acroſs the beds, which by ſome is made high like a tent, to walk under and view the flowers at pleaſure: though we would alſo obſerve that theſe flowers will blow in great perfection without all this care of covering; only that by protecting ſome of the fineſt ſorts growing in beds, the blow may be prolonged a week or fortnight longer in full beauty, than thoſe that are fully expoſed; being careful to remove all covering as ſoon as ever the flowers begin to fade, to admit the free air, rains, &c. for the benefit of the roots.

When however the flowering is paſt, or as ſoon as ever the flowers are faded, it is proper to cut off the head or ſeed-veſſel of the fine varieties particularly, that it may not rob the root of any nouriſhment, which will thereby encreaſe more conſiderably in ſize and ſtrength.

Though when intended to ſave ſeed for ſowing, ſome heads of the ſtouteſt plants muſt be left to ripen.

The next care is in June, when the leaves and flower-ſtem are decayed and withered, determining that the roots have ceaſed growing, and draw no nouriſhment from the earth; at which period of reſt is the time for lifting or taking them up out of the earth, in order both to ſeparate the encreaſed off-ſets, and to reſerve them out of ground till autumn, that they may have ſome reſpite from growth, as well as to be planted in freſh-prepared beds to promote the merit of the future year's bloom; and which work of lifting theſe bulbs ſhould be practiſed annually at the above period to all the choicer kinds, in the beds, and alſo to the more inferior ſorts in the borders, &c. at leaſt every other year, if they appear to have encreaſed by off-ſets conſiderably. See BULBUS.

Therefore, at the above period, of the decay of the ſtem and leaves, taking the opportunity of dry weather, proceed with a garden trowel to dig them up carefully one and one, with all the off-ſets to each; ſpreading them in a dry, airy, ſhady place, here remaining two or three weeks out of the ſun and wet; but expoſed to the free air, they will gradually dry and harden; then detach the off-ſets and all adhering earth, and the outer decayed ſkins or huſks that are the relicks of the old bulb; after which expoſe them again in the ſame place to dry, and harden effectually; then put them up ſafe in the dry, in boxes, the large bulbs and the off-ſets ſeparately, to remain till the time of planting them again arrives.

Obſerving, the flowering bulbs are to be planted as has been already adviſed, and the off-ſets in ſeparate beds, by way of a nurſery, to remain to acquire due ſize and ſtrength to flower, then managed as the other flowering bulbs. See BULBUS.

Thus far concludes the principal general culture of the great family of Tulips; we ſhall now next exhibit the general method of propagation.

*Method of Propagation.*

All the ſorts of Tulips are propagated abundantly by off-ſets of the root annually, and are alſo raiſed from ſeed to gain new varieties.

By Off-ſets.—The old bulbs encreaſe faſt by off-ſets bulbs from their ſides, and which ſhould generally be ſeparated annually, eſpecially thoſe of the fine Tulips; and the ſeaſon for this is in June, when the flower is paſt, and the leaves and flower ſtems begin

to wither; then take up the roots wholly, and ſeparate the ſmall encreaſed off-ſets from the larger bulb, planting the off-ſets in nurſery beds, in drills ſix inches aſunder, and three deep, to remain a year or two to grow to a flowering ſtate; managing the flowering bulbs as already directed.

Thus by off-ſets may all the ſorts of Tulips be propagated in great abundance, and by off-ſets every approved ſort continued always the ſame, ſo that being in poſſeſſion of any new or approved varieties, may with one ſoon encreaſe the ſtock by off-ſets annually, and will generally produce flowers ſimilar to their reſpective parent bulb. See Bubus.

By Seed.—This is a moſt tedious undertaking, as the Tulip, from the time of ſowing the ſeed, is ſeven or eight years before it produces flowers; and after all, they at firſt appear only ſelf-colours, before explained, often requiring two, three, or more years longer before they break into different colours or variegations, ſo that the tedioufneſs of raiſing ſeedling Tulips to a flowering ſtate, often deters many from the undertaking. It is however, the method by which all the fine varieties of Tulips were firſt obtained, and new varieties are ſtill annually gained, as many perſons ſow ſome every year, in expectation that after the firſt ſix or ſeven years a new ſhew of flowers will be produced, and out of which many new varieties will annually diſcover themſelves in each parcel; and it is by this proceſs the Dutch are famous for furniſhing ſuch an infinity of fine varieties, ſupplying almoſt all other countries in Europe.

Therefore, for the ſatisfaction of thoſe who may incline to embark in this tedious undertaking, we will exhibit the method of ſowing and rearing the ſeedlings to a flowering ſtate.

The ſeed for this purpoſe ſhould be ſaved from ſome ſtrong-blowing plants, that are always fully expoſed to the free air, ſuffering them to ſtand till the heads or ſeed-pods and ſeed are duly ripened; then gathered in a dry day, and laid by upon a ſhelf, &c. till September, the ſeaſon for ſowing them; which may be performed either in a bed of any good light mould, in the full ground, expoſed only to the morning ſun; or in boxes or large pots of light earth, and placed in a ſimilar ſituation: obſerving, if in beds, to ſow the ſeed in ſhallow drills, and cover it near an inch deep; and if in boxes or pots, ſow it on the ſurface, and cover it the ſame depth; they will come up the following ſpring with fine graſs like leaves; at which time be careful to keep the young plants very clean from weeds; likewiſe give frequent moderate waterings in dry weather, continuing it occaſionally as long as they retain their green leaves in a growing ſtate, and not after; and when the leaves decay, clear the ſurface careſully from weeds and moſs, if any, and directly ſift a little freſh mou'd over the ſurface half an inch deep, which is all that is required till next year; when the plants will riſe with much ſtronger leaves, in proportion to the encreaſed growth and ſtrength of the bulbs; which, when their leaves again decay in ſummer, ſhould be taken up and planted in nurſery beds, in drills two inches deep, and the ſame diſtance in the lines, with the rows four or five inches aſunder; here to remain and take their growth for two years, keeping the beds clean from weeds, and ſift ſome freſh earth over the ſurface every autumn, half an inch deep; then, in the ſecond ſummer, when their leaves decay, the roots being by that time conſiderably improved in growth, ſhould be again taken up, and planted in a freſh prepared bed, in drills three or four inches aſunder, in which to remain two years longer; then at the decay of the leaf, ſhould be again tranſplanted into freſh beds, in rows as before; where let them remain to blow, afterwards ordered as the other flowering bulbs of Tulips, in the manner already ſhewn.

Obſerve however, when they are in full flower, to examine them with attention, in order to mark ſuch of them as diſcover the beſt properties, that they may be ſeparated from the others at the proper lifting ſeaſon, and replanted in beds by themſelves for breeders; removing them annually at the proper ſeaſon into different beds of oppoſite or contrary ſoils, as before ſuggeſted; ſuch as one year in poor hungry earth, the next in a much richer mould; and ſo continue till they break into variegations and ſtripes of different colours.

Thus each year as the flowers break into colours, mark them in order to be taken up, and

and ranked with the other improved varieties.

TURNERA.

Turnera.

Comprehends tender exotics of ſomewhat ligneous growth, natives of the hot parts of America, and retained here in ſtoves for variety; riſing with erect ſtalks, dividing into branches; adorned with oval and ſpear-ſhaped leaves, and pentapetalous flowers at the ſides of the branches.

Claſs and order, *Pentrandria Trigynia.*

*Characters.*] CALIX, is monophyllous, bell-ſhaped, tubulous, divided into five ſegments, and is permanent.—COROLLA, five heart-ſhaped, pointed, plane-ſpreading petals, with narrow claws, inſerted into the tube of the calix —STAMINA, five awl-ſhaped ſhort filaments, having acuminated erect antheræ.—PISTILLUM, a conical, germen, three ſlender ſtyles, and multifid capillary ſtigmas. —PERICARPIUM, an oval, trivalvous, unilocular capſule, containing many oblong obtuſe ſeeds.

1 TURNERA *Ulmifolia.*

*Elm-leaved Shrubby Turnera.*] Riſes with ligneous, ſhrubby-like, branchy ſtalks, ſix or eight feet high; garniſhed with oval, ſpear-ſhaped, rough leaves, having two glands at the baſe; and yellow flowers ſitting cloſe to the foot-ſtalks of the leaves towards the upper part of the branches.

*Variety.*] Narrow Elm-leaved Turnera.—(*Anguſtifolia*).

This ſpecies and variety are ſomewhat of a biennial nature, as that after being raiſed from ſeed, &c. they are frequently apt to go off the ſecond or third year; though they alſo often prove of longer duration. Obſerving, that as they are tender exotics from South America, they muſt be kept always in pots, and placed conſtantly in the ſtove.

They begin flowering in June, continuing in ſucceſſion very ornamentally all ſummer and autumn, ſucceeded by ripe ſeeds in September.

Both the varieties are eaſily raiſed from ſeed, ſowed in the ſpring in pots, and plunged in the bark bed, or any other hot-bed, under glaſſes; and when the plants are come up, two, or three inches high, plant them ſeparately in ſmall pots, which plunge alſo in the ſtove bark-bed, and order them as other exotics of ſimilar temperature.

TUSSILAGO.

Colt's-Foot.

It conſiſts of low, hardy, herbaceous, creeping-rooted perennials, for variety and medical uſes, remarkable for producing their flowers before their leaves, riſing with low erect ſtalks only a few inches high; roundiſh, heart-ſhaped, and oval leaves cloſe to the ground, and the ſtalks terminated by ſmall compound flowers, ſome radiated, and ſome without a radius.

Claſs and order, *Syngeneſia Polygamia Superflua.*

*Characters.*] CALIX, a compound flower, having a cylindrical cup compoſed of fifteen or twenty linear, ſpear-ſhaped, equal ſquama or ſcales.—COROLLA, a variouſly compound flower; being either all hermaphrodite florets, or hermaphodites only in the diſc, funnel-ſhaped, and four or five-parted at the brim; and the female florets, where any, are narrow, tongue-ſhaped, and entire. —STAMINA, in the hermaphrodites, five very ſhort hair-like filaments, having cylindric antheræ.—PISTILLUM, a ſhort, germen, thread-ſhaped ſtyle, longer than the ſtamina, which in the females is bifid.—PERICARPIUM, none; a ſingle ſeed in each floret, which is oblong, compreſſed, and crowned with a hairy down.

There are about nine ſpecies of *Tuſſilago*, the moſt material of which are the following, conſiſting of the common *Tuſſilago*, and five other ſpecies.

1 TUSSILAGO *Farfara.*

*Farfara, Common Tuſſilago, or Colt's-foot.*]—Hath fibrated, creeping, white, perennial roots; ſending up ſingle, thickiſh, imbricated ſtalks, five or ſix inches high; that are uniflorous, or each crowned with only one largiſh, pale-yellow, radiated flower, appearing in March and April before the leaves; and when the flower is paſt, the leaves ariſe, being large, roundiſh, nearly heart-ſhaped, angulated, indented, and hoary.

This ſpecies inhabits moiſt ſituations every where in Britain, and moſt parts of Europe in great plenty, creeping and multiplying exceedingly by the roots; and is not much cultivated in gardens.

It

It, however, is worth culture in the herbaceous collection, both to effect variety among the ſpring flowers, in patches in the borders, where it will exhibit an agreeable ſingularity; and may alſo be cultivated as a medicinal plant, its leaves being often uſed in decoctions, and as a principal ingredient in the Britiſh Herb Tobacco.

It is one of the *filius ante pater* tribe, i. e. ſon before the father; becauſe the flowers always ariſe before the leaves.

[2] TUSSILAGO *Alpina.*

*Alpine or Mountain Colt's-Foot.*] Hath a creeping perennial root, ſending up an almoſt naked ſtalk, only three or four inches high, which is uniflorous or crowned with only one purple flower, in March and April, and almoſt round, or orbicular heart-ſhaped, crenated leaves, downy underneath.

*Variety.*] Round hoary-leaved.

[3] TUSSILAGO *Anandria.*

*Anandria, or Siberian Colt's Foot.*] Hath a creeping, perennial root ſending up erect ſomewhat ſcaly ſtalks, three or four inches high, crown each with one purpliſh flower early in the ſpring; and oval lyre-ſhaped leaves cloſe to the ground.

[4] TUSSILAGO *Petaſites.*

*Petaſites, Tuſſilago Major, or Common Butter Bur.*] Hath a thick, fleſhy, creeping, perennial root; ſending up thick hollow ſtacks; ſix inches high, crowned with ſeveral purpliſh flowers, collected in an oval thyrſe or ſpike, having all the florets floſcular hermaphrodites, and large roundiſh heart-ſhaped leaves, from one to two feet broad; grows wild in moiſt meadows, &c. in England and other parts of Europe, and is a medicinal plant.

[5] TUSSILAGO *Hybrida.*

*Hybridian German Tuſſilago, Greater Colt's Foot, or Long-ſtalked Butter Bur.*] Hath a creeping perennial root; ſending up ſtalks ſix or eight inches high, crowned with an oblong thyrſe or ſpike of flowers, having many naked, floſcular, female florets; and large leaves ariſing after the flower is paſt.

[6] TUSSILAGO *alba.*

*White Alpine Tuſſilago, or ſmaller Butter Bur.*] Hath creeping perennial roots; ſlender ſtalks, three inches high; crowned with a flat thyrſe or ſpike of white flowers; and largiſh leaves, ariſing after the flowers are paſt.

All theſe ſpecies of *Tuſſilago* are very hardy perennials, of great duration in root, but annual in ſtalk and leaves, and moſtly all poſſeſs the ſingularity of producing their flowers before the leaves; the flowers riſing immediately from the root on low tender foot-ſtalks, having in ſome ſorts only one flower at top; in others, ſeveral collected in a thyrſe or cloſe bunch, generally all appearing early in ſpring; and when the flowers fade, the leaves ariſe directly from the root, on ſhort foot-ſtalks near the ground, continuing till autumn, then decay; and the roots remaining, ſend up flowers and leaves again every ſpring; producing alſo abundance of downy ſeeds early in ſummer.

Theſe plants may be employed in gardens for variety, and although they naturally affect moiſt ſituations, they will ſucceed almoſt any where, and will encreaſe abundantly by the root, be of many years duration, and exhibit their flowers annually in ſpring.

But the *Common Tuſſilago*, &c. may alſo be cultivated in beds as medicinal plants.

They are all very eaſily propagated by parting the roots in autumn or ſpring, the ſmalleſt ſlip will readily grow, and ſoon multiply.

# U.

ULEX.
Furze, Gorſe, or Whins.

They are ſhrubby, thorny plants, conſiſting of two ſpecies only; one ſort, *Common Furze*, is a noted, hardy, European ſhrub of heaths and commons, ſometimes cultivated for variety in ſhrubberies, and occaſionally to form field hedges; and the other is a tender exotic ſhrub of Africa, requiring ſhelter of a green houſe here in winter; are both of very branchy, buſhy growth, five or ſix feet high, remarkable for their evergreen ſhoots and branches, armed with ſtrong evergreen ſpines; ſmall, thinly placed, deciduous leaves, and numerous papilionaceous flowers all along the ſides of the young branches.

Claſs and order, *Diadelphia Decandria*.

*Characters.*] CALIX, two oval, oblong, concave, permanent leaves.—COROLLA, is papilionaceous, with five petals, having a large, oval, heart-ſhaped, emarginated vexillum; two ſhort, oblong, obtuſe wings, and a bipetalous carina or keel.—STAMINA, ten diadelphous filaments, having ſimple antheræ.— PISTILLUM, an oblong cylindric germen, a riſing ſtyle, crowned with a ſmall obtuſe ſtigma.—PERICARPIUM, an oblong, turgid, bivalvular, unilocular pod, containing roundiſh ſeeds.

There are only two ſpecies, both of ſhrubby growth, as before ſuggeſted; one of which is hardy and grows wild in all European countries; the other tender. See each below, under its proper head.

*Hardy kind and Varieties.*

Conſiſts of one ſpecies, *Common Gorſe or Whins*, having ſeveral varieties, all ſhrubby, very thorny plants, natives of England, &c.

1 ULEX *Europæus*.

*Common European Ulex, commonly called Furze, Gorſe, or Whins.*] Riſes with upright, hard, woody, whitiſh-brown ſtalks, branching numerouſly and buſhy, five or ſix feet high or more, having green ſhoots and branches, all very cloſely armed with ſtrong green ſpines ſparſedly; ſmall, acute, hairy leaves; and numerous large yellow flowers all along the ſides of the young branches.

*Varieties are.*] Common yellow Furze of our waſtes and heaths.— White flowered Furze.—Long-ſpined Furze.—Short-ſpined Furze.—Large French Furze.—Dwarf Furze —Round podded Furze.

They all flower in March, April, and May, very profuſely, ſucceeded by turgid pods, containing the ſeeds; ripening in autumn.

This ſpecies and varieties are remarkable for having all their young branches, ſhoots, and ſpines of a laſting green colour, but are deciduous in leaf, which come out in the ſpring and ſoon fall off, though from the nature of their numerous branches and ſpines remaining always green, they appear like evergreens, and we have ranked them accordingly in that tribe. See EVERGREENS.

It grows wild on waſtes, heaths, and commons in England and all other countries in Europe, often overſpreading large tracts of ground, ſo is not generally cultivated in gardens, except ſometimes a few in extenſive ſhrubberies for variety and obſervation, and for which purpoſe a few plants of the different ſorts merit admittance in large grounds, both as flowering ſhrubs and evergreens, as they will effect a ſingular diverſity at all ſeaſons.

The Common Furze is likewiſe ſometimes cultivated for outward hedges to fields, generally ſowing the ſeed on the top of dry banks in drills an each deep, where the plants are always to ſtand, ſuffering them to grow up thick quite from the bottom; and will form a cloſe regular hedge, by clipping with garden-ſhears every ſummer, in moiſt weather; though as this kind of hedge, when old, is apt to die off in gaps, become ſtraggling, and naked and hollow at bottom, it is but in ſmall eſtimation; however, thoſe who

who incline it may eaſily raiſe a hedge, by ſowing the ſeed in autumn or ſpring in any light ſoil, in drills as above in the place where the hedge is intended.

*Tender Kind.*

[2] ULEX *Capenſis.*

*Ulex from the Cape of Good Hope, or African Berry-bearing Furze.*] Riſes with a hard ligneous ſtem, branching four or five feet high, having flexible green branches, terminated each with a ſingle ſpine; ſmall, obtuſe leaves ſingly, and numerous flowers along the ſides of the branches.

The flowers of both theſe ſpecies of *Ulex*, and reſpective varieties, are all of the papilionaceous or butterfly kind, and compoſed each of five petals, ſee the *Characters*; and in the Common Furze particularly, the flowers riſe very numerouſly all over the plants, appearing very conſpicuous; ſucceeded by great abundance of ſeed, which is diſcharged from the pods widely around, and fill the ground with many young plants.

If intended to cultivate the Common European Furze and varieties, it may be introduced ſparingly in any of the large ſhrubbery quarters, as before hinted; either raiſe them from ſeed, or procure young plants.

And the ſecond ſort muſt be potted, and placed among the green-houſe plants to have ſhelter in winter.

They are all propagated by ſeed.

Sow that of the firſt ſort either in autumn or ſpring in any light ground, either in patches in the ſhrubbery, where it is deſigned the plants are to remain, or in drills in nurſery beds, and tranſplant the plants while they are quite young, for as they have hard, woody, naked roots, they do not ſucceed well by tranſplantation when grown large.

But when intended to raiſe a Furze hedge, always ſow the ſeed at once in the place where you deſign the hedge to be, in drills an inch deep, ſuffering the plants to remain in the ſame place, being careful to keep them clear from weeds the firſt two or three years till they are a little advanced in growth.

The ſecond ſpecies may alſo be raiſed from ſeed, which muſt be obtained from Africa, its native ſoil; ſowing it in pots and plunge them in a hot-bed, and when the plants are come up, two or three inches high, prick them in ſeparate ſmall pots, and manage them as other green-houſe ſhrubs.

The propagation of this ſort may alſo be tried by layers and cuttings, aſſiſted alſo by plunging the pots of cuttings in a hot-bed or bark-bed.

ULMUS.

Elm Tree.

The Elm is a moſt valuable deciduous timber-tree, of lofty and magnificent growth, and of great eſtimation both as an eminent foreſt-tree, and for various garden plantations, hereafter hinted; ariſes to a very conſiderable ſtature and magnitude, with a large, regular, branchy head, cloſely adorned with oblong, oval, rough, dark-green leaves, and bunches of ſmall apetalous flowers of no beauty, ſucceeded by ſmall roundiſh ſeeds.

Claſs and order, *Pentandria Digynia.*

*Characters.*] CALIX, is monophyllous, five-parted at the rim, coloured within, and permanent.—COROLLA, no petals.—STAMINA, five awl-ſhaped filaments, twice the length of the calix, having ſhort, erect, four-furrowed antheræ.—PISTILLUM, an orbicular erect germen, two reflexed ſtyles, terminated by downy ſtigmas.—PERICARPIUM, a large, oval, compreſſed, membraneous, drupaceous fruit, including one roundiſh compreſſed ſeed.

There are only three ſpecies of *Ulmus*, all of the tree kind and deciduous tribe, and all proper for any hardy plantation; though there is only one ſpecies common in England, which, however, comprehends many excellent varieties, conſiſting of the various ſorts of Elms that exhibit themſelves in field hedge-rows, woods, and garden plantations in almoſt all parts of the kingdom.

[1] ULMUS *Campeſtris.*

*Field or Common Elm Tree.*] Riſes with an upright, ſtraight ſtem, and regular branchy head, ſixty or ſeventy feet high or more, covered with a rough bark; largiſh, oblong, oval, doubly-ſerrated, rough, dark-green leaves, unequal at the baſe; and reddiſh or green flowers in bunches towards the ends of the branches; ſucceeded by oval fruit, furniſhing ripe ſeeds the end of May or beginning or middle of June.

*Varieties.*] Common ſmall-leaved Engliſh

Elm.—Larger rough-leaved Engliſh Elm.—Small leaved Corniſh Elm.—Narrow-leaved Wych or Scotch Elm.—Broad-leaved Wych Elm.—Rough-barked Dutch Elm, with large leaves.—Yellow or gold ſtriped-leaved Elm.—Silver ſtriped Elm.—Silver-duſted Elm. All of which are varieties of the ſame ſpecies, having all doubly-ſerrated leaves, unequal at the baſe.

Their principal variation and difference of growth is as below.

*Small-leaved Engliſh Elm.*] Is of fine, ſtraight, lofty growth, branching very numerouſly, regular, and erectly in a beautiful pictureſque manner, very cloſely garniſhed with ſmalliſh oval leaves, and attains a great magnitude.

It is found growing abundantly in the hedge-rows of fields in the ſouth of England, and the counties round London, &c and on account of its lofty ſtature and cloſe, regular, branchy head, is an approved ſort for all garden ornamental plantations, as being the moſt eſtimable for beauty and elegance of growth, of all the varieties of Elm; alſo as a foreſt or timber-tree next in ſize and value to the oak for ſtrength and durability.

The large-leaved Engliſh Elm is diſtinguiſhed from the former by its leaves being broader and rougher.

*Narrow-leaved Corniſh Elm.*] Is alſo of ſtraight handſome growth, almoſt next in ſtature to the Engliſh Elm, branching erect very cloſe and regular, and very cloſely garniſhed with ſmall, oval, lively green leaves.

Is highly valued both for ornamental plantations, and as a foreſt-tree.

*Wych or Scotch Elm.*] Riſes to a great height and magnitude of trunk, with a large, ſpreading, branchy head, having very large, oblongiſh, rough leaves.

Both the varieties of this *Narrow and Broad-leaved Wych Elm*, are alike in their general growth, having much more ſpreading branches than the two former ſorts; are remarkably ſwift growers, and will proſper in almoſt any ſoil, and ſoon attain a ſtately growth, ſo are proper to plant as foreſt-trees and for ornament in parks and other capacious places, and in avenues, &c.

*Dutch or Rough-barked Elm.*] Grows very large, branching irregularly, and widely around, covered with a rough fungous bark; produces large, vigorous ſhoots diſtantly placed; and large, oval, acute-pointed, very rough leaves. Was firſt introduced from Holland many years ſince, and was formerly in much eſteem for forming ornamental hedges in gardens, and other trained devices; but by its ſtrong, irregular, open growth, is improper for ſuch purpoſes, and is much better calculated for planting in parks, fields, avenues, &c. and ſuffered to grow rural; alſo to plant as a timber-tree.

All the varieties of Elm arrive to very large timber-trees, as may be obſerved by old trees growing in parks, hedge-rows, and avenues, and the timber is exceedingly valuable for many ſtrong purpoſes, ſuch as moſt kinds of wheel-wrights work, water-pipes for conducting water under ground, for water-pumps, and various other uſes in different trades, where ſtrength and durability is required; and, therefore, as they are alſo of a free, expeditious growth, and will thrive in any common ſoil, and expoſure; they demand univerſal culture as foreſt-trees, both in aſſembly with other trees of the foreſt kind, and to form woods, thickets, and ranges by themſelves; and to plant in hedge-rows along the borders of fields, and in clumps in the corners thereof; obſerving the Engliſh Elm, Corniſh, and Wych Elms, are the moſt eligible ſorts for general culture as timber-trees; though it is adviſeable to plant ſome of all the varieties to effect the greater diverſity in the plantations; and all of which are eaſily raiſed, ſome from ſeeds, and all of them alſo, both by layers, ſuckers, and by grafting, as hereafter directed, or may be purchaſed very reaſonable at all the public nurſery grounds.

Remarking they ſhould generally be planted out finally while they are young, i. e. from four or five to ſix or eight feet high, as at that ſize they will generally take root, eſtabliſh themſelves, and grow more freely and expeditiouſly than older trees. See PLANTATION.

Though it is obſervable of the Elm, in particular, that they will bear removal when large, better than almoſt any other tree, on account of the root being furniſhed with numerous ſmaller roots and fibres, ſpreading horizontally near the ſurface, ſo as trees of fifteen or twenty feet high or more, may be ſafely removed, as they will often readily riſe with a large ſpread of roots, and frequently with balls of earth thereto; and being

being planted in a capacious pit, will readily ſtrike, and grow freely.

However this removal, or tranſplantation of large Elms, is not an eligible practice for thoſe intended for timber-trees, but only occaſionally in garden-plantations, in places where an immediate ſhade or ſhelter is wanted, or to form a blind where neceſſary, or to hide any diſagreeable object; for all of which purpoſes large Elms may be more readily removed with ſucceſs than any other tree of the deciduous tribe.

But Elms, conſidered for purpoſes in garden-plantations, they are employed occaſionally for ornament, and for ſhade and ſhelter; both as rural objects, and for training uniformly. Conſidered, however, as rural trees, they are excellently adapted for forming avenues, either alone, or in concert with other deciduous trees of loſty ſtature, and to aſſiſt in forming boundary plantations of capacious lawns in parks, &c. likewiſe to form ſhade, by being diſpoſed either in thickets or clumps, or ranged along near the verge of ſhady walks, &c. and are likewiſe excellent to plant for ſhelter, where neceſſary, being planted in groves, thickets, clumps, or ſingle ranges, at a little diſtance, they will break the violence of tempeſtuous winds and cold blaſts, both from the main habitation, and from particular diſtricts of the garden; and have a fine ornamental effect, diſpoſed in extenſive open places, ſome in ſtrait ranges, others in clumps, and ſome as ſingle detached ſtandards; in all of which modes of planting them, they ſhould generally be ſuffered to aſſume their own natural growth, except trimming off large lateral ſhoots from the ſtem, and reducing very irregular ſtraggling branches of the head.

For training uniformly, no deciduous tree is better adapted; they form beautiful loſty hedges, very cloſe from bottom to top, from ten to forty or fifty feet high; the Engliſh and Corniſh elms particularly, and which two varieties were formerly in great repute in forming loſty, towering hedge-work in gardens, both internally, and on the outer boundary, along road ſides, ſerving both for ornament and ſhelter. And Elm hedge-work was alſo often trained into arches, porticoes, pilaſters, galleries, &c. ſo as to produce a very noble effect: and for all which purpoſes of uniform training, the ſmall-leaved Engliſh and Corniſh Elms, above noticed, are conſiderably the beſt calculated, no account of their thick and regularly-branching growth, and cloſe placed foliage. See HEDGES.

All the ſorts of Elm will grow well enough in any common ſoil, but ſucceed beſt in a rich, deep earth, or that of a loamy nature; though we may often ſee large and proſperous Elms on all ſorts of land, both rich and poor, moiſt and dry; generally, however, allowing the Engliſh Elms the beſt ſituations; and the Wych and Dutch Elms may be planted occaſionally on the coarſeſt ſoils.

The ſeaſon for removing or tranſplanting Elms, may be almoſt any time in open weather, from the firſt fall of the leaf in October or November, till March. See PLANTING.

*Method of Propagation, &c.*

The propagation of Elms is effected different ways; as by ſeed, ſuckers, layers, and occaſionally by grafting.

By Seed.—The raiſing of Elms from ſeed, is more particularly practiſed for the Wych Elm, which ripens ſeeds abundantly every ſummer in May or June; the others do not always perfect ſeed in this country; therefore about the end of May, or beginning of June, when the Wych Elm-ſeed is perfectly ripe, let a due quantity be procured for ſowing. Then may proceed to ſow ſome of it almoſt directly, in four-feet-wide beds, half an inch deep, (ſee SOWING SEED); and the reſt may be kept till ſpring, to inſure the greater chance of ſucceſs; previouſly drying it well, out of the ſun, then put it up cloſe, till towards autumn, when it will be proper to mix it with ſand, to preſerve it more effectually through the winter, till the middle of February; then ſow it in beds, as above; remarking of that which was ſowed in ſummer, or as ſoon as gathered, it will be of advantage to hoop the beds over with rods, in order to be covered with mats occaſionally, to afford ſhade from the hot mid-day ſun, giving alſo occaſionally waterings in dry weather; and thus in a month many of the plants will come up, being careful to keep them well weeded, as they may require, and a repetition of moderate waterings, continued in dry weather: though the whole will not probably come up before the following ſpring; but thoſe of the ſpring ſowing generally all come up regularly together the ſame ſeaſon, in April,

April, and often aſſume a freer growth than thoſe which came up in autumn; however, in both caſes ſuffer the ſeedling plants to have one or two years growth in the ſeed-bed, then plant them out in nurſery lines, the rows three feet aſunder, and the plants fifteen or eighteen inches diſtant in each row; here give them the common nurſery care, and train them for the purpoſes intended. If for ſtandards, either for timber, or ornamental plantations, train each to a ſingle ſtem, and as they advance in height, clear the ſtem from all ſtrong lateral ſhoots, leaving only the very ſmall twigs, juſt to draw and detain the ſap, for the better augmentation of the ſtem; ſuffering the leading top-ſhoot to remain entire, as alſo the principal branches of the head.—And thoſe deſigned for hedge-work, &c. let them branch out all the way, and become feathered or branchy to the bottom, or as low as may be required for the trained purpoſes intended, only trimming them occaſionally, either with the knife or garden-ſhears, as you ſhall ſee proper, to give them the intended form.

And thus all the ſorts being trained in the nurſery for the purpoſes intended, till they have four or five years growth, they will be fit for final tranſplantation, where they are to remain.

By Suckers.——Moſt of the ſorts of Elms ſend up many ſuckers from the roots, but moſt plenteouſly in the Engliſh and Dutch ſorts; and which, if taken up carefully with the roots, they will form good plants; therefore in autumn, winter, or ſpring, having recourſe to any large trees that ſend up plenty of ſuckers, let theſe be digged up, with as many fibres as poſſible; and of which chuſing only ſuch that are well rooted, trim them for planting, by cutting them down at top to ſix or eight inches; lay them in ſmall trenches or drills, five or ſix inches deep, one row in each, half a foot apart, and the drills about half a yard aſunder; giving waterings in ſpring and ſummer; and here let them remain two years, to form good roots, then tranſplanted in wide nurſery rows, and managed as directed for the ſeedlings.

By Layers.—All the ſorts of Elms may be eaſily raiſed by layers, previouſly preparing a quantity of ſtools, to produce ſhoots, ſituated near the ground, for laying (ſee STOOLS.) And the proper ſeaſon for laying them is autumn or winter, performing it by ſlit-laying, (ſee LAYERS); and as ſoon as all are layed, and moulded in, top every layer with a knife, down to one eye above ground, and the work is finiſhed.

Thus thoſe layers will readily take root in ſpring and ſummer following, and ſhoot at top probably two or three feet long by the next autumn, when they ſhould be detached from the ſtools, and planted in nurſery rows, a yard aſunder, and half a yard diſtant in the rows; and when they begin to ſhoot, train them with one leading ſhoot only, as obſerved for the ſeedling Elms, managing them in the ſame manner.

By Grafting.—All the varieties of elms may be propagated, and continued diſtinct, by grafting upon ſtocks of the Wych Elm, raiſed from ſeed, ſuckers, or layers, though the ſeedling ſtocks are preferable; and this method of propagation upon the Wych Elm ſtocks particularly, as being the faſteſt and largeſt growers, will be found a good improvement of the other more moderate growers; ſuch as the Engliſh Elm in particular, which being grafted on the Wych Elm, generally attains a larger growth, and ſooner grows to maturity. So that having raiſed a quantity of ſeedling Wych Elms, as before directed, ſome rows of them may be allotted for ſtocks, which, after having two years growth in the nurſery lines, they will be fit to graft; and the latter end of January; or beginning of February, is the proper ſeaſon: at which time having procured a quantity of cuttings of young moderate ſhoots of the beſt Engliſh Elm, or any other variety you intend to propagate, and cut into four or five-inch lengths, proceed to inſert them in the ſtocks by the method of whip-grafting. (See GRAFTING.) Obſerving, however, as it is moſt adviſeable, to graft them as low as poſſible, the earth ſhould be removed away a little down to each root, then cutting off the head of the ſtock within two or three inches of the bottom, inſert the grafts one in each ſtock, as above, binding them cloſe, and clay them well; then draw the earth up about, and over the clay, the more effectually to ſecure it from falling off by the effects of froſt, &c.

Being thus grafted, the grafts will unite timeouſly the ſame ſpring, and ſhoot forth ſtrongly in ſummer, half a yard, or two or



three

three feet in length; obſerving to encourage only one leading ſhoot; ſo that if they fork at top into two or more ſhoots, take off the weakeſt, and leave the beſt ſhoot for the leader; diſplacing alſo all large ſide-ſhoots from the ſtem; and let the top or leading ſhoot remain always entire, as alſo the general branches of the head grow in height as faſt as they can, agreeable to the nature of their growth, eſpecially all thoſe intended for ſtandards.

UMBELLA. An Umbel of flowers.

It is a mode of cluſter-flowering; many flowers being produced cloſe together on ſo many ſlender foot-ſtalks, proceeding all from one point, or common center, and riſe all to an equal height; ſo as the flowers they ſupport forms generally an even round ſurface at top, ſuch as in the flowers of *angelica*, carrot, parſnip, &c.

The umbellate mode of flowering differs from the *corymbus*, in which the foot-ſtalks alſo elevate the flowers to an equal height at top, reſembling an Umbel. The foot-ſtalks of the umbellate flowers iſſue all from one centre or point of the common receptacle, attaining all nearly an equal length and height; whereas thoſe of the *corymbus* riſe from different points, lower and higher, and each lower foot-ſtalk attains a greater length than that immediately above it; ſo as they altogether, with the flowers at top, form alſo an even ſurface, like the umbellate flowers. See CORYMBUS.

In the umbellate flowers, when none of the foot-ſtalks of the Umbel are ſubdivided, it is termed a Simple Umbel; when on the other hand each flower-ſtalk is ſubdivided at its extremity into a number of ſmaller foot-ſtalks, that immediately ſupport the flowers, ſo as each ſuch foot-ſtalk bears at top a little Umbel, commonly called partial Umbels, and that the main or general Umbel, or aggregate, being made up of ſeveral ſuch ſmaller ones, it is termed a compound Umbel.

Umbellate flowers are generally produced at the top of the ſtalks, and extremity of the branches of the plants of the umbelliferous tribe.

The flowers that compoſe an Umbel are generally numerous, and ſeparately ſmall, conſiſting each commonly of five petals, five ſtamina, and two ſtyles, and each flower is ſucceeded by two naked ſeeds.

UMBELLIFEROUS plants are ſuch as produce their flowers in an Umbel, and conſiſt both of herbaceous vegetables and trees, but moſtly of herbaceous plants.

The principal of which are, angelica, carrot, parſnip, parſley, celery, fennel, dill, chervil, fennel-giant, lovage, Alexanders, coriander, carraway, black maſter-wort, Macedonian parſley, ſamphire, burnet, ſaxifrage, &c. all of which being of the Umbelliferous tribe, moſtly riſe with erect, hollow ſtalks, generally branching in the alternate way; the leaves alſo are placed alternate; which in ſome are ſimple, in others fingered, and ſome pinnated or winged; and all the ſtalks and branches generally terminate in an Umbel of flowers, either ſimple or compound, in the different plants. See each in its proper genus.

Of this tribe of plants, ſeveral of them are valuable eſculents of the kitchen-garden, and ſome are wholeſome medicinal plants. See KITCHEN-GARDEN and MEDICINAL PLANTS.

URTICA. Nettle.

This genus conſiſts of hardy, herbaceous plants, ſome of which are well known as common and troubleſome weeds in gardens; and one or two ſpecies of foreign growth are retained in ſome gardens, to effect variety; riſes with upright ſtalks, adorned with oblong and oval leaves, and monoecious flowers, without petals, growing in catkins at the ſides, and top of the ſtalks.

Claſs and order, *Monoecia Tetrandia.*

*Characters.*] CALIX, male and female; flowers ſeparated on the ſame plant, having in the males a four roundiſh-leaved cup; and in the females an oval cup, compoſed of two valves, and is permanent.——COROLLA, no petals, but in the males is a pitcher-ſhaped nectarium in the center of the flower.——STAMINA, four awl-ſhaped ſpreading filaments, having bilocular antheræ.—PISTILLUM, an oval germen, (no ſtyle) and a hairy ſtigma.——PERICARPIUM, none; a ſingle, oval, compreſſed ſeed lodges in the permanent female calix.

There are many ſpecies of *Urtica*, and of which two of them are common in the gardens, retained as plants of variety; the other being plants of but little uſe or eſtimation, and ſome of them are common weeds; ſuch as the common Stinging Nettle, which grows too faſt every where, are never cultivated; the common Nettle however has great virtues

tues as a medical plant, and is alſo in eſtimation as an excellent pot-herb among poor country people, in the ſpring, while it is young; and is of a very wholeſome, cleanſing property.

The moſt material ſorts in our gardens are the following two, both of foreign growth, but are hardy enough to ſucceed here in the full ground.

[1] URTICA *Cannabina.*

*Hemp Urtica, commonly called Tartarian Nettle.*] Hath a perennial fibrous root, ſending up many ſquare ſtalks, five or ſix feet high; having oblong, three-parted, deeply-cut leaves, placed oppoſite; and flowers produced in long catkins at the axillas, towards the upper part of the ſtalks.

It grows naturally in Tartary and Siberia.

[2] URTICA *Canadenſis.*

*Canadian Nettle.*] Hath a fibrous, perennial root, ſending up erect ſtalks, two feet high; adorned with heart-ſhaped, oval leaves, placed alternately; and flowers produced in branching amentums, growing erect.

[3] URTICA *Cylindrica.*

*Cylindrical-flowered American Nettle.*] Hath a fibrated, perennial root; upright ſtalks, three feet high; oblong, ſpear-ſhaped, oppoſite leaves; and flowers produced in cylindric, undivided, ſolitary amentums.

All theſe plants are perennial in root, ſending up new ſtalks annually in ſpring, flowering in July and Auguſt, and the ſeeds ripen in autumn.

They are all hardy plants, and ſucceed in any common ſoil.

They are retained in our gardens, to diverſify the herbaceous collection, and effect variety in the pleaſure-ground; and may be planted in any of the open borders, and other compartments, and in which they will endure many years, and flower annually; though their flowering is more ſingular than beautiful.

Propagate them by parting the roots in autumn, winter, or early in ſpring.

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# V.

VALVULA. A Valve, or opening of a ſeed-veſſel.

A Valve is the external diviſion or opening of a dry ſeed-veſſel, ſuch as a capſule or pod, which when ripe ſplits into two or more openings, to diſſeminate the ſeeds, and each opening or diviſion is called a Valve.

The Valves or openings, as to number, are from one or two to five or many, in the plants of different genera; ſo that when a a capſule, &c. is compoſed of one Valve, it is termed *univalve*; of two, *bivalve*; when of three, *trivalve*; four, *quadrivalve*; and of five, *quinquevalve*, &c. See CAPSULA.

VALERIANA. Valerian.

The plants are hardy, herbaceous perennials and annuals; ſome for variety in the pleaſure-garden, and others for medical and eſculent uſes; all of the fibrous-rooted kind, ſending up annual ſtalks, two or three feet in the perennials, the other but a few inches; ornamented with ſimple and pinnated leaves in the different ſpecies; and terminated by ſpikes, or umbellate cluſters of monopetalous, five-parted flowers.

Claſs and order, *Triandria, Monogynia.*

*Characters.*] CALIX, a kind of ſmall border placed on the germen.—COROLLA, is monopetalous and tubulous, with the tube gibbous, and divided above into five obtuſe ſegments.——STAMINA, three awl-ſhaped, erect filaments, having roundiſh antheræ.—PISTILLUM, a germen under the corolla, filiform ſtyle, and thick ſtigma.—PERICARPIUM, a coronated or crowned deciduous capſule, falling off before it opens, containing a ſingle oblong ſeed.

There are about eighteen ſpecies; and the moſt material of which commonly cultivated are the following five, the firſt four being flowery and medical perennial plants, and the laſt is an eſculent annual, uſed as a ſal-

lad

lad herb, commonly called Corn-Sallad, or Lamb's Lettuce.

[1] VALERIANA *Rubra.*

*Red Valerian.*] Hath a thick, ligneous, ſpreading, perennial root; upright, round, ſmooth ſtalks, branching two or three feet high; adorned with ſpear-ſhaped, entire leaves; and the ſtalk and all the branches terminated by cluſters of red flowers, having tails.

*Varieties.*] Deep red-flowered—Pale red-owered—White-flowered—Narrow-leaved (*anguſtifolia*) with bright-red flowers,

They all flower in May or June; continuing in ſucceſſion moſt part of ſummer, appearing tolerably ornamental; and ripen abundance of ſeed in autumn, which is often ſcattered by winds all around, and in crevices of old buildings, &c. and from which many young plants naturally riſe, and attain maturity.

[2] VALERIANA *Phu.*

*Phu, or Garden Valerian.*] Hath thick, fleſhy, jointed, fibrous, creeping, perennial roots; crowned with numerous leaves, moſtly entire, and ſome divided; amidſt them upright, round ſtalks, branching two or three feet high, garniſhed with pinnated leaves, and with all the ſtalks and branches terminated by umbel-like cluſters of white flowers, having only three ſtamina; appearing in May and June.

[3] VALERIANA *Officinalis.*

*Wild officinal Valerian.*] Hath long, fleſhy, fibrous roots, collected into heads; crowned with many winged leaves; upright ſtalks, two feet high, garniſhed alſo with pinnated leaves, and all the ſtalks and branches terminated by umbel-like cluſters of flowers, tinged with purple, having only three ſtamina; flowering in May or June.

[4] VALERIANA *Pyrenaica.*

*Pyrenean Mountain Valerian.*] Hath fibrous perennial roots; crowned with large heart-ſhaped, ſerrated leaves, on long foot-ſtalks; amidſt them upright, channelled ſtalks, a yard high, garniſhed with ſmaller heart-ſhaped leaves, ſometimes by three together, near the top, and the main ſtalk and branches crowned with umbel-like bunches of pale-red flowers, having three ſtamina; flowering in June.

[5] VALERIANA *Locuſta* (*annual*).

*Locuſta, or Lamb's Lettuce, commonly called Corn-Sallad.*] Hath fibrous annual roots; crowned with ſmall, oblong, narrow leaves, broadeſt and rounded at the top; and when it ſhoots for ſeed, riſes with a forking, ſlender ſtalk, only a few inches high, garniſhed with ſmall leaves, and terminated by cluſters of ſmall white flowers, having only three ſtamina.

This grows naturally in corn-fields in England, &c. hence is commonly called Corn-Sallad, as being uſed as a ſallad herb; and as ſuch it is alſo cultivated in gardens for winter and ſpring uſe.

*Varieties.*] There are many varieties of this, differing in the form and ſize of the leaves; ſome being very narrow, others broader and obtuſe, or oblong and ſpear-ſhaped; ſome being entire, and ſome are ſerrated or indented, &c. but poſſeſs all the ſame virtues, and may be indifferently uſed as ſallad herbs, to uſe while young, before they grow large and rank taſted; and they prove ſubſtitutes in winter and ſpring ſallads, when the garden-lettuce is ſcarce.

All theſe five ſpecies are very hardy plants, and proſper in any common ſoil of a garden, in all ſeaſons of the year.

The firſt four are perennials, durable in root, and annual in ſtalk, which riſe from the root every ſpring, flower in May or June, ripen ſeed abundantly in Auguſt, then decay down to the ground.

All theſe four perennial ſorts may be employed in the pleaſure-ground, for ornament and variety; and the ſecond and third ſort alſo as medical plants, and as ſuch are highly valued: may be all had at the public nurſeries in the proper planting ſeaſon, autumn, winter, or ſpring; and may all be planted in any of the open compartments, in aſſemblage with other large herbaceous perennials; where they will endure for years by the root, and flower annually in their proper ſeaſon, and multiply abundantly by the root; and may alſo be raiſed from ſeed. See their *Propagation.*

However, the ſecond and third ſorts, *Valeriana Phu* and *Valeriana Officinalis* being alſo very valuable medical plants, if intending to cultivate them as ſuch, they ſhould be diſpoſed in beds among other medicinal herbs.

But as to the fifth ſort, *Valeriana Locuſta*, an annual, it is calculated only as an eſcu-

lent herb in ſallads, principally in winter and early ſpring; being ſowed in autumn towards the latter end of Auguſt, and in September, in any open ſituation, and raked in, they will come up the ſame year, thinning the plants to three or four inches, and they will be fit for uſe in winter and ſpring following: ſome may alſo be ſowed early in the ſpring, to continue a longer ſucceſſion.

VARIETAS.

A Variety.

Varieties are the off-ſpring of certain ſpecies, varying in ſome accidental habit of growth from the natural ſpecies or parent plant; yet their variation being generally confined to ſome particular parts, they ſtill retain the ſpecific mark of diſtinction of the parent, to diſtinguiſh them from plants of a different ſpecies.

So that a ſpecies often compriſe from one or two, to ſome hundreds of Varieties, varying in ſome particular, either in their habit of growth, foliage, flowers, fruit, œconomical qualities, &c. and both trees and herbs, annuals, biennials, and perennials are ſubject to variation.

For example, ſpecies are ſubject to numerous accidental modes of variation, effected either by the difference of culture, climate, ſoil, age, &c. and conſiſt often in the difference of magnitude; luxuriant, and dwarf growths; erect, and trailing plants; ſmooth and prickly Varieties; broad and narrow-leaved kinds; entire-leaved, divided-leaved, and curled-leaved; ſpotted, and variegated-leaved; ſmooth-leaved, hairy-leaved, and downy-leaved plants; ſingle-flowered, double-flowered, and proliferous flowered; white, red, blue, yellow, and variegated-flowered; ſweet-ſcented, rank-ſcented, &c. Likewiſe the fruit in ſome ſpecies are liable to great variations; as round fruit, oval fruit, oblong fruit; alſo ſmooth fruit, furrowed fruit, warted fruit, hairy and downy fruit; likewiſe fruit varying greatly in ſize, in the ſame ſpecies; likewiſe in colour, taſte, and quality: in ſome ſpecies alſo, the root is found to vary, as in the carrot, radiſh, turnep, and potatoe, which often aſſume different forms and colours; and ſome ſpecies furniſh both male and female Varieties in different plants, as in the dioecious claſs; thus the above, and numerous other circumſtances occur in the various forms of ſporting nature, in exhibiting ſo many different Varieties in certain ſpecies.

But notwithſtanding all the above different modes of variation in the particular parts of the variating plants of a ſpecies, if thoſe of each ſpecies ſtill all retain the ſame ſpecific botanic mark of diſtinction, as that which diſtinguiſhes the reſpective natural ſpecies from all others, it proves them all Varieties or off-ſpring of the ſame parent ſpecies.

For as every different ſpecies in a genus is diſtinguiſhed by ſome particular uniformly conſtant mark in ſome part of its growth, all plants in the ſame genus bearing exactly the ſame ſpecific mark of diſtinction unchangeably, are, notwithſtanding their accidental variation in other parts of their growth, all Varieties of one ſpecies.

Therefore, all the plants that are produced from the ſeed of the ſame ſpecies, although they may aſſume different forms and appearances, are to be regarded as the genuine Varieties.

The difference betwixt a ſpecies and a Variety is, that a true ſpecies raiſed from ſeed, will, notwithſtanding it may ſport into different variations, it ſtill retains its true and conſtant ſpecific mark through all its Varieties; and ſuppoſe there are Varieties of that ſpecies with broad leaves, and narrow leaves, white flowers, red flowers, and blue flowers, &c. and that if you ſow the ſeed of any one, it will probably produce ſeedling plants of all theſe ſorts.

It is principally from ſeedling plants that the different Varieties of particular ſpecies firſt obtain, exemplified in the *auricula*, *polyanthus*, &c. each being a diſtinct ſpecies of the ſame genus; and each conſiſts of innumerable Varieties, in the colours and variegations of the flowers, all firſt obtained from ſeed; which from that of the ſame plant, often ſport into many different colours and variegations in the flower; each variation forming a genuine variety; and probably not one of them with a flower exactly like that of the original parent plant: yet each Variety retains the ſpecific difference of its reſpective ſpecies, the auricula never changing to the polyanthus, nor that to the auricula, but the varieties of each keep their proper diſtinction; for the auricula in all its Varieties, continues its *ſmooth*, *fleſhy*,

*fleſhy, ſerrated leaves*; and the polyanthus, its *rough dentated leaves*. The ſame is alſo obſervable of the carnation, ranunculus, anemone, tulip, and numerous other plants, which ſport wonderfully in Varieties.

Likewiſe numerous ſorts of trees, of the fruit kind particularly, are remarkably ſportive in Varieties; both in their modes of growth, foliage, and fruit: for example, the botaniſts admit of only one ſpecies of apple-tree, which however furniſhes an almoſt endleſs Variety of its fruit, in regard to ſhape, ſize, colour, taſte, and quality; as alſo in the growth of the trees, differing both in magnitude and ſize, as well as in the ſize and colour of the foliage; and its ſpecific diſtinction is, *ſerrated leaves, and cloſe ſitting flowers growing in an umbel*, which diſtinction runs through all the numerous Varieties, however different the trees may be in magnitude of growth, leaves, and fruit: the ſame is alſo obſervable of the pear, plum, common-cherry, peach, &c. there being only one ſpecies of each of theſe, but the Varieties of the fruit are very numerous; all of which different variations of the above ſorts of trees were firſt obtained from ſeedlings; i. e. trees raiſed from the kernels or ſtones of the fruit; and almoſt all the fruit-tree kind ſport exceedingly in their ſeedling plants; inſomuch, that out of hundreds of trees raiſed from the ſeeds of the beſt fruits, very few, if any, will produce fruit exactly like the parent, or that poſſeſs any good perfection; ſo that on account of the uncertainty of continuing the approved ſorts of fruits from ſeedling plants, recourſe is always had to grafting and budding to propagate the ſorts intended, or to continue and encreaſe any new-acquired good Variety.

The greater number of varieties, both of herbaceous plants and trees, are of a variable or ſporting nature; ſo as when raiſed from ſeed there is no dependence on having the ſeedlings come the ſame ſort again, but vary into different ſorts of one another; in which caſe, the propagation of thoſe that are perennial, to continue them with certainty, is effected either by ſuckers, off-ſets, or ſlips of the root; or, in the woody kinds, by layers, cuttings, grafting, and budding: but as to annuals, there is no other reſource for propagating them than by ſeed, except in ſome few ſorts by cuttings, ſuch as the *Chryſanthemum* and *Naſturtium*, &c. but in many ſorts where particular attention is obſerved in ſaving the ſeeds, always only from the moſt perfect kinds, they will continue tolerably permanent, and often come the ſame again, or but with very little variation.

Many of the kitchen-garden plants and annual flowers, conſiſt of many Varieties in the ſame ſpecies; yet by good care in always ſaving ſeed from the moſt perfect plants that diſcover no ſigns of a degeneracy, they remain permanent from ſeed year after year.

However, moſt of the perennial tribe, both herbaceous and woody kinds, as they being generally more variable from ſeed, they afford abundant opportunities to continue the permanency of any particular Variety, by off-ſets from the root, ſuckers, layers, cuttings, grafting, and budding, as before noticed.

Sometimes, however, plants though not raiſed immediately from ſeed, will from ſome accidental cauſe vary conſiderably from their natural growth, and aſſume a very different appearance; originating either through culture, climate, expoſure, ſoil, age, diſeaſes, luxuriancy or poverty of nouriſhment, contuſions, or other circumſtances; and hereby produce accidental Varieties in ſome particular parts of growth.

As to the determining the reality of the Varieties, it is in many ſorts moſt eaſily accompliſhed by comparing the variable plant with the ſpecific deſcription of the natural ſpecies, and the variations of growth of the variety with the ſame parts in the natural plant; though there are many varieties that require both knowledge and experience of the moſt expert botaniſt to diſtinguiſh them with certainty.

From not obſerving the true ſpecific diſtinction, Varieties have been ranged as diſtinct ſpecies, and thereby exceedingly encreaſed the number of ſpecies erroneouſly, and cauſed great confuſion in the true botanic arrangement; for on account of the ſlighteſt difference new ſpecies were introduced, which modern improvers of botany diſcovered to be only Varieties of certain

pecies, and have corrected the errors accordingly.

Therefore, in botanic arrangements, we ought to be careful not to ſubſtitute a Variety in the room of a ſpecies, which being ſometimes a difficult point, requires the greateſt care; and the cauſe of our running into ſo many errors in this particular, is owing to nature's working and appearing in ſo many different forms, either through the nature of different countries, climates, ſoils, expoſures, and culture, &c. as before obſerved.

We have, however, in the courſe of the arrangement of the numerous articles in this book, been careful to collect the different Varieties under their reſpective ſpecies, exhibiting at once each ſpecies and its Varieties, when any, arranged diſtinctly together under their proper genera.

VERATRUM. White Hellebore.

This genus is compoſed of hardy herbaceous perennials for ornament and variety in the pleaſure-ground, and for medicinal uſe; are of the fibrous and tuberous-rooted tribe, riſing with upright annual ſtalks, ſome a yard or more high, others hardly a foot; garniſhed with large, oblong, and ſpear-ſhaped, nervous leaves; and all the ſtalks and branches terminated by ſpikes of cloſely-placed hexapetalous flowers.

Claſs and order, *Polygamia Monoecia.*

*Characters.*] CALIX, hermaphrodite and male flowers on the ſame plant, all without any calix.—COROLLA, ſix oblong, ſpear-ſhaped, ſerrated, permanent petals.—STAMINA, ſix awl-ſhaped filaments, having quadrangular antheræ.—PISTILLUM, three oblong, erect germens, terminating in a very ſhort-ſtyle; which in the males is ſcarce viſible, and ſimple ſtigmas.—PERICARPIUM, three oblong, erect, compreſſed, univalvular, unilocular capſules, opening on the inſide; containing many oblong, compreſſed, membranaceous ſeeds.

There are only three ſpecies, all very hardy perennials; the two firſt of which are tall growing plants, with large broad leaves; and the third is of much lower growth and narrower leaves, as in their deſcriptions below.

[1]VERATRUM *Album.*

*White-ſpiked Ruſſian Veratrum, or Common White Hellebore.*] Hath a thick, fibrated, perennial root, crowned with large, oblong, oval, nervoſe leaves, near a foot long, and half as broad; upright, round, thick, very branchy ſtalks, three or four feet high; garniſhed with leaves diminiſhing gradually upward; and all the ſtems and branches terminated by decompound or ſubdivided ſpikes of whitiſh-green, cloſely-placed flowers, having erect petals; appearing in May and June.

It inhabits the mountains of Ruſſia, Siberia, and Auſtria, &c. but hath been introduced into the Engliſh gardens, both as an ornamental and medical plant.

[2]VERATRUM *Nigrum.*

*Black-ſpiked Hungarian Veratrum.*] Hath a thick, fibrous, perennial root; crowned with large, long, nervous, yelloviſh-green leaves; upright, thick ſtalks, branching four or five feet high, garniſhed with a few leaves; and with all the branches terminated by compound, leſs-divided ſpikes of dark-red flowers, having ſpreading petals; appearing in June and July.

It grows naturally in Hungary and Siberia.

[3]VERATRUM *Luteum.*

*Yellow-ſpiked Virginia Veratrum.*] Hath a bulb-like tuberous root, ſending up oblong, ſpear-ſhaped, nervoſe leaves, ſpreading cloſe to the ground; an upright ſingle ſtalk, about ten inches or a foot high; garniſhed with a few cloſe-ſitting leaves, and terminated by a cloſe, ſingle ſpike of yellow flowers; in June and July.

All theſe three ſpecies are hardy herbaceous plants, durable in root, but annual in leaf and ſtalk, which riſe in ſpring; the leaves riſing large, broad, and folded, aſſume a ſingular appearance; and between them the flower-ſtalks of thick, robuſt growth, riſing to a flowering ſtate in May, June, and July; having all the branches terminated by the ſpikes of flowers, which ſingly are rather ſmall; but are collected numerous and cloſe in each ſpike; ſucceeded by ripe ſeeds in autumn, in the firſt and ſecond ſort particularly; and ſoon after the ſeeds are ripe, the ſtalks decay.

Theſe plants have been long inhabitants of the Britiſh gardens, for variety and medical purpoſes; particularly the firſt and ſecond ſorts.

They all ſucceed in any common ſoil and expoſure.

As

As to their general merit as ornamental plants, or for variety, &c. they having great ſingularity in their large furrowed leaves, as well as in their different modes of flowering; they demand culture in every herbaceous collection, diſpoſed in the open borders and other compartments of the pleaſure-ground; in which they will effect a moſt agreeable diverſity, in ſpring and ſummer.

Likewiſe, as medical plants, the firſt ſort in particular *(Veratrum Alba)* is in great repute: the root of which forms a powerful ſternutatory powder; and for which purpoſe, the plants may be planted in any bed or border of common earth.

The propagation of all the three ſpecies is by ſeed, and by parting the roots.

By Seed.—This may be ſowed either in autumn, ſoon after it is ripe, or in ſpring, in a bed of light earth, and raked in; and they will come up in April or May, giving occaſional watering and weeding; and in July or Auguſt, prick them out in nurſery-rows, to remain a year or two to grow ſtrong; then tranſplanted where they are to remain.

By parting the Roots.—Autumn, when the leaves decay, or early in ſpring, before new ones ſhoot forth, is the proper period; when the roots may be divided into ſeveral ſlips, not too ſmall, and planted at once where they are always to ſtand.

## VERBASCUM.

Mullein.

The plants are hardy, herbaceous, perennials, biennials, and annuals, proper to diverſify the borders and other compartments of the pleaſure-ground as flowery plants; alſo for medicinal preparations; all of the fibrous-rooted tribe, ſending up erect ſtalks, moſtly tall; from two or three, to four or five feet ſtature; and ſome of much lower growth, garniſhed in the different ſorts with oblong, and oval leaves; and monopetalous, rotaceous flowers in ſpikes, and ſingly at the ſides, and ends of the branches.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX, is ſmall, monophyllous, acutely five-parted, and permanent.—COROLLA, is monopetalous, wheel ſhaped, with a very ſhort cylindric tube, and ſpreading brim cut into five oval ſegments.—STAMINA, five awl-ſhaped, declinated, ſhortiſh filaments; having roundiſh, compreſſed, erect antheræ.—PISTILLUM, a roundiſh, germen, filiforme, inclinating ſtyle; and a thickiſh, obtuſe ſtigma.—PERICARPIUM, a roundiſh, bilocular capſule opening at top, and numerous angular ſeeds.

There are about eleven ſpecies of *Verbaſcum*, ſome perennial, others biennial and annual, as before noticed; and the moſt material ſorts thereof are the following; though the firſt three or four ſorts are the moſt common in the Engliſh gardens.

[1]VERBASCUM *Ferrugineum. (Perennial.)*

*Ferrugineous, or Iron-coloured Moth Mullein*] Hath a perennial root; oval, oblong, ſlightly-crenated leaves; upright ſtalks, three or four feet high, terminating above in long looſe ſpikes of yellowiſh iron-coloured flowers.

[2]VERBASCUM *Nigrum. (Perennial.)*

*Black Mullein with a yellowiſh-purple flower.*] Hath a perennial root; oblong, heart-ſhaped, foot-ſtalked leaves, eight or ten inches long, hoary underneath; upright, angular ſtalks, four or five feet high, garniſhed with a few narrow leaves, and terminated by long ſpikes of yellow flowers with purple antheræ.

It grows by way ſides, &c. in England, and moſt parts of Europe.

[3]VERBASCUM *Phœniceum. (Perennial.)*

*Phœnician Purple Moth Mullein.*] Hath a perennial, and ſometimes a biennial root; ſending up oval, crenated, rough-ſpreading leaves; an upright ſtalk about three feet high, almoſt naked of leaves; and purpliſh flowers along the ſide of the ſtalk and branches.

[4]VERBASCUM *Myconi. (Perennial.)*

*Verbaſcum Myconi, or Borage-leaved Mullein*] Hath a perennial root; crowned with oval, thick, woolly leaves ſpreading flat on the ground; ſlender, naked foot-ſtalks four or five feet high, divided upward into ſmaller, each terminated by one large blue flower. Is a native of the Pyrenees.

[5]VERBASCUM *Thapſus. (Biennial.)*

*Thapſus or Great White Mullein.*] Hath a biennial root; long, broad, whitiſh leaves, woolly on both ſides; an upright, thick, firm ſtalk, five or ſix feet high, garniſhed with decurrent, woolly leaves, and terminating above in a long thick ſpike of yellow flowers.

It

It grows naturally in England, &c. by way-ſides, and other uncultivated ſterile places; but ſometimes retained in gardens for variety, and as a medicinal plant.

[6] VERBASCUM *Sinuatum. (Biennial.)*

*Sinuated Mullein.*] Hath a biennial root; oblong, ſinuated, pinnated leaves; an upright, firm ſtem, four or five feet high, having the primary or firſt branches oppoſite, and garniſhed with oblong, amplexicaule, naked leaves; and cluſters of yellow flowers along the ſides of the branches. Grows naturally in France and Italy.

[7] VERBASCUM *Phlomoides. (Biennial.)*

*Phlomoide Mullein with a large Yellow Flower.*] Hath a biennial root; oval leaves, woolly on both ſides; an upright, purpliſh ſtalk, four or five feet high; garniſhed with ſmall, oval, hoary leaves, the lower ones having foot-ſtalks; and the ſtalks terminating in thick ſpikes of large, yellow flowers. Grows naturally in Italy.

[8] VERBASCUM *Lychnitis. (Biennial.)*

*Hoary white Mullein.*] Hath a biennial root, large, oblong, wedge-ſhaped, woolly leaves; an upright ſtalk, three or four feet high, garniſhed with white leaves, and ſmall white flowers in ſpikes at the joints and ends of the ſtalk and branches. Grows in England, &c. in ſandy, chalky ſituations.

*Variety.*] With yellow flowers.

[9] VERBASCUM *Blattaria. (Annual)*

*Blattaria, or Amplexicaule-leaved Moth Mullein.*] Hath an annual root, upright ſtalk four or five feet high; oblong, ſmooth, ſinuated, complexicaulous leaves; and yellow flowers ſingly along the ſides of the ſtalk and branches.—Grows naturally in England, &c.

*Variety.*] With white flowers.

All theſe nine ſpecies of the *Verbaſcum*, are of the herbaceous tribe; the firſt four are perennials with durable roots, the next four biennials, and the laſt of all is an annual; all of which riſe with erect ſtalks in the ſpring, attaining to full height, and flower in June and July: in all of which the flowers are monopetalous and five-parted; and produced in ſpikes and other modes of flowering, as in their reſpective deſcriptions; are moſtly of an odoriferous nature, and are ſucceeded in moſt of the ſorts, by ripe ſeeds in Auguſt or September.

They are all very hardy plants, that will proſper in any common ſoil and expoſure in the common borders, &c. of a garden.

Conſidered as garden plants, they merit admittance, to diverſify the large borders and other ſimilar compartments of the pleaſure-ground; particularly the larger ſorts, which though not ſo ornamental as ſome, yet by their different foliage, luxuriant ſtems, and different colours and modes of flowering, they will effect a conſpicuous variety.

*Method of Propagation.*

They are propagated by ſeed and off-ſets of the roots.

By Seed.—Sow it either early in autumn or ſpring, in a bed or border of light earth, and raked in: and when the plants are come up three inches high, plant them out either in the borders to remain, or in nurſery-lines till autumn, then tranſplanted finally; though the annual ſort ſhould be planted out early in ſummer to remain, or ſowed at once in patches where the plants are intended to ſtand.

By Off-ſets.—All the perennial ſorts furniſh off-ſets from the ſides of the roots, which may be detached in autumn, or early in the ſpring, and planted either where they are to remain to flower, or in nurſery-rows till autumn, then removed to their borders, &c.

## VERONICA.

Speedwell.

This genus conſiſts of many herbaceous perennials, &c. ſome of them retained in gardens for variety; riſing, ſome with trailing, and others with erect ſtalks, from five or ſix inches, to ſo many feet high; adorned moſtly with ſmalliſh, oval, oblong, and ſpear-ſhaped leaves, and of other different forms in the ſeveral ſpecies; and monopetalous, wheel-ſhaped, four-parted flowers, in ſpikes and bunches at the ſides and ends of the branches.

Claſs and order, *Diandria Monogynia.*

*Characters.*] CALIX, is divided into four ſpear-ſhaped ſegments, and permanent.—COROLLA, is monopetalous, wheel-ſhaped, and divided above into four oval ſegments.—STAMINA, two riſing filaments, with oblong

oblong antheræ.—PISTILLUM, a compreſſed germen, ſlender declining ſtile, and ſimple ſtigma. — PERICARPIUM, a heart-ſhaped, compreſſed, quadrivalve, bilocular capſule, having many roundiſh ſeeds.

There are upwards of thirty ſpecies of *Veronica*, moſtly herbaceous perennials and annuals; a few of the former are the moſt remarkable, ſome as medical plants, and for variety; others as flowery ornamental plants to decorate the compartments of the pleaſure-ground, and are moſtly all of the fibrous-rooted tribe; ſome natives of England, and ſome are exotics from different diſtant parts of Europe and America; and are of hardy growth.

[1] VERONICA *Officinalis.*

*Common Officinal Speedwell of the Shops.*] Grows with low procumbent ſtalks, rooting at the joints; oval, ſerrated leaves, placed oppoſite; and the ſtalks terminated by ſpikes of ſmall blue flowers.

It is a native of woods, commons, and ſterile paſtures in England, &c. and is a valuable medicinal plant.

[2] VERONICA *Serpyllifolius.*

*Mother-of-Thyme-leaved Speedwell, or Paul's Betony.*] Hath trailing ſtalks, branching and rooting at the joints; ſmall, oval, ſmooth, crenated leaves; and white flowers in racemous ſpikes terminating the branches.

It inhabits moiſt meadows in England, &c. and is ſometimes uſed in medicine.

[3] VERONICA *Hybrida.*

*Hybridaceous Speedwell, or Welſh Veronica.*] Riſes with an erect, branchy ſtalk, eight or ten inches high; oblong, obtuſe, ſerrated, rough leaves, placed oppoſite; and the ſtalks and branches terminated by long ſpikes of blue flowers. Grows on the mountains in Wales, &c.

[4] VERONICA *Siberia.*

*Siberian Septifolious Veronica.*] Riſes with upright, firm, hairy ſtems, four or five feet high; broad, oval, ſpear-ſhaped leaves, by ſevens, ſurrounding the ſtalk in a verticillus; and the ſtalks terminated at top by long ſpikes of blue flowers.

[5] VERONICA *Virginica.*

*Virginian Quaternate-leaved Veronica.*] Riſes with upright ſtalks, four or five feet high; garniſhed with ſpear-ſhaped, quaternate, and quinate leaves; and terminated by long ſpikes of white flowers.

[6] VERONICA *Auſtriaca.*

*Auſtrian Blue Veronica.*] Riſes with upright, branchy ſtalks, three feet high; linear-ſpear ſhaped leaves, cut pinnatedly; and ſpikes of blue flowers at the ſides of the ſtalk and branches.

[7] VERONICA *Maritima.*

*Maritime or Sea Veronica.*] Riſes with erect ſtalks two feet high; ſpear-ſhaped, unequally ſerrated, ternate leaves; and the ſtalks terminated by ſpikes of bright-blue flowers. Grows near the ſea in ſeveral parts of Europe.

[8] VERONICA *Incana.*

*Hoary Tartarian Speedwell of Ucrania.*] Riſes with an erect, hoary ſtalk, a foot high; oblong, crenated, hoary, oppoſite leaves; and the ſtalks terminating in erect ſpikes of blue flowers.

[9] VERONICA *Teucrium.*

*Germander Speedwell.*] Riſes with erect ſtalks, three or four feet high; oval, obtuſe, indented, rough leaves; and long ſpikes of blue flowers at the ſides of the branches. Is a native of Germany.

[10] VERONICA *Longifolia.*

*Long-leaved Veronica.*] Grows two feet high, with ſpear-ſhaped, acute, ſerrated, ſhining-green leaves, placed oppoſite; and the ſtalks terminated by long ſpikes of blue flowers. Grows naturally in Italy.

All theſe plants are hardy herbaceous perennials, with fibrous roots of long duration, ſending up new ſtalks annually; arriving to full growth in May, June, and July, when they flower abundantly in ſpikes and cluſters as in their deſcriptions; each ſpike and cluſter compoſed of many ſeparate flowers, univerſally monopetalous, wheel-ſhaped, and divided into four parts, and ſucceeded by ripe ſeed in Auguſt and September.

They are all hardy enough to grow any where in a garden; but are generally the moſt proſperous in ſomewhat ſhady moiſt ſituations.

Their merit for garden culture is principally for variety and ornament to the common borders, &c. as flowery plants; and being arranged in concert with other hardy perennials, they will effect an agreeable diverſity in the ſummer time, when in flower.

Many of theſe plants are kept in the public nurſeries for ſale, and may be tranſplanted in autumn or ſpring in the gardens, where they will flower annually, and encreaſe conſiderably by the roots.

They

They are propagated by parting the roots, and by ſeed.

By parting the Roots.—This may be effected either in autumn or ſpring, by taking up the plant and dividing the roots into ſeperate ſlips, not too ſmall; and planted either where they are to remain, or in the nurſery for a year, or till wanted.

By Seed.—Sow it in autumn or in ſpring in any bed or border, and raked in; and when the plants are come up and a little advanced in growth, plant them out either to remain or in the nurſery.

VERTICILLUS, a Whorl.

A mode of flowering, in which the flowers are placed in whirls or rings round the joints of the ſtalk as in baum, ſage, hyſſop, &c.

VIBURNUM.

Wayfaring Tree, Gelder Roſe, Lauruſtinus, &c.

This genus exhibits a collection of elegant deciduous and evergreen flowering ſhrubs, great ornaments to the ſhrubbery and other hardy plantations, riſing with upright branchy ſtems, ſome fifteen or twenty feet high, others not half ſo much; adorned with heart-ſhaped, roundiſh, lobated, and oval leaves in the different ſpecies; and numerous ſmall bell-ſhaped, five-parted flowers in large umbellate cluſters at the termination of the branches, appearing very ornamental.

Claſs and order, *Pentandria Trigynia.*

*Characters.*] CALIX is ſmall, five parted, and permanent.—COROLLA is ſmall, monopetalous, bell-ſhaped, and divided into five obtuſe reflexed ſegments.—STAMINA, five awl-ſhaped filaments, with roundiſh antheræ.—PISTILLUM, a roundiſh germen under the corolla, no ſtyle, but a turbinated gland inſtead of it, and three ſtigmas.—PERICARPIUM, a roundiſh unilocular berry, with one roundiſh hard ſeed.

To this genus is added the *Opulus* or *Gelder Roſe*, and the *Tinus* or *Laurus Tinus*; conſiſting in the whole of eight or nine ſpecies, all of the hardy tree and ſhrub kind, ſix or ſeven of which being of the deciduous kind, and one is an evergreen.

*Deciduous Kinds.*

Under this head is compriſed the common *Viburnum*, *Opulus* or *Marſh Elder*, and *Gelder Roſe*, and four or five other ſpecies, all of the deciduous kind, or ſuch as ſhed their leaves in winter; ſome are of Engliſh growth, others from America, and garniſhed moſtly with large, heart-ſhaped, round, and lobated leaves, and numerous ſmall white flowers, collected in cymoſe umbels at the ends of the branches, as in their deſcription.

[1] VIBURNUM *Lantana.*

*Lantana, Common Viburnum, Wayfaring, or Pliant Mealy Tree.*] Riſes with a woody ſtem, branching twenty feet high, having very pliant ſhoots covered with a lightiſh-brown bark; large heart-ſhaped, veined, ſerrated leaves, white and hoary underneath; and the branches terminated by umbels of white flowers, ſucceeded by bunches of red berries. Grows naturally in England in hedges, &c.

*Varieties.*] Striped-leaved—Oval-leaved.

[2] VIBURNUM *Opulus.*

*Opulus or Gelder Roſe.*] Conſiſting of the two following varieties, one with flat-flowers, the other globular, viz.

*Gelder Roſe with flat Flowers, or Marſh Elder.*] Grows eighteen or twenty feet high, branching oppoſite, of an irregular growth, and covered with a whitiſh bark; large lobated or three-lobed leaves on glanduloſe foot-ſtalks, and large flat umbels of white flowers at the ends of the branches, ſucceeded by red berries. Grows naturally in England in marſhy places.

*Common Gelder Roſe, with a Globular Umbel (Roſeum).*] Grows fifteen or eighteen feet high, branching like the other, garniſhed with large lobated or three-lobed leaves, on glandular foot-ſtalks; and large globular umbels of white flowers at the ends of the branches, in great abundance.

*Variety.*] Variegated-leaved.

This tree when in bloom exhibits a ſingularly fine appearance, the flowers, though ſmall, are collected numerouſly into large globular umbels round like a ball; hence, it is ſometimes called Snowball-tree.

[3] VIBURNUM *Prunifolium.*

*Plum-leaved American Viburnum.*] Grows ten or twelve feet high, covered with brown and reddiſh bark; roundiſh, crenated, ſerrated, ſmooth leaves; and the branches terminated by umbels of white flowers, ſucceeded by dark red berries, rarely ripening in England.

[4] VIBURNUM *Acerifolium.*

*Maple-leaved Virginian Viburnum*] Grows eight or ten feet high; lobated leaves cut into three principal lobes, growing on ſmooth foot-ſtalks; and white flowers in umbels along the

the ſides of the branches, rarely ſucceeded by berries in England.

[4] VIBURNUM *dentatum.*

*Dentated Virginia Viburnum.*] Grows eight or ten feet high, having a ſmooth light bark; oval, dentated-ſerrated, plicated leaves; and large round bunches of white flowers at the ends of the branches, rarely ſucceeded by berries in England.

[5] VIBURNUM *nudum.*

*Naked-umbelled, or Lauruſtinus-leaved American Viburnum.*] Grows ten or twelve feet high, very branchy on every ſide to the bottom, covered with a reddiſh or purple bark; large, oval, ſpear-ſhaped, wholly entire leaves, of a ſhining green colour; and the branches terminated by umbels of white flowers, reſembling thoſe of the common *Lauruſtinus*, not ſucceeded by berries in England.

*Varities.*] Deciduous-leaved— Evergreen-leaved.

[6] VIBURNUM *Caſſinoides.*

*Caſſinoides, Baſtard Caſſine, or Caſſioberry Buſh.*] Grows eight or ten feet high, branching numerouſly, aſſuming a buſhy growth; ſmall, oval-oblong, crenated, ſmooth leaves placed oppoſite on foot-ſtalks, having keel-ſhaped glands, and ſmall umbels of white flowers at the ſides of the branches; is a native of Virginia and Carolina.

All theſe deciduous *Viburnums* come out into leaf in April and May, and commonly flower in June and July, the flowers ſmall, but collected numerouſly into cymoſe umbels; are very conſpicuous, ſucceeded by large bunches of red berries in autumn; though ſeldom any but thoſe of the *Lantana* and *Opulus* attain perfection in England.

*Evergreen Kinds.*

Under this head is compriſed only one ſpecies *(Common Lauruſtinus)* a well known old inhabitant of our gardens, furniſhing ſeveral beautiful varieties, valuable both as fine, hardy evergreens, and elegant flowering ſhrubs, remarkable for exhibting their flowers in winter and early ſpring in defiance of the ſevereſt cold.

[7] VIBURNUM *Tinus.*

*Common Lauruſtinus, or Evergreen Viburnum.*] Grows eight or ten feet high or more, branching numerouſly from the bottom upward, aſſuming a cloſe buſhy growth, with the branches ſomewhat hairy and glandulous; very cloſely garniſhed with oval, wholly entire leaves of a ſtrong green colour, placed in pairs oppoſite; and whitiſh and red flowers, collected numerouſly in large umbellate cluſters all over the plant, at the ſides and ends of the branches, from January until March or April, exhibiting a moſt beautiful appearance.

*Varieties.*] Narrow-leaved — Broad-leaved — Shining-leaved — Hairy-leaved— White ſtriped-leaved — Yellow ſtriped leaved; all of which are of ſhrubby, buſhy growth, cloſely garniſhed with leaves all the year, and produce a great profuſion of umbellate flowers in winter and ſpring, as before mentioned.

All theſe different ſpecies of *Viburnum*, both deciduous and evergreen kinds, being of the tree and ſhrub kind, are woody and durable in root, ſtem, and branches; the firſt ſeven ſorts are deciduous, and the eighth is an evergreen, and are all of ſuch hardy temperature, as to grow freely in the open ground all the year, in ſhrubberies, and other hardy plantations; though the *Viburnum Caſſinoides* is rather ſomewhat tender in winter, whilſt young, but may be gradually hardened to bear all weathers like the other ſorts, eſpecially if planted in a ſheltered ſituation; but as it is ſometimes liable to ſuffer in very ſevere winters, it is alſo adviſeable to keep ſome in pots to move under ſhelter occaſionally in ſevere weather; however, all the other ſorts, both deciduous and evergreen kinds, will ſucceed any where at all ſeaſons without trouble.

With reſpect to their uſes for garden-culture, they all demand attention as furniture to diverſify the ſhrubbery, and alſo other ornamental plantations of the tree and ſhrub kind; all of which may be procured at the public nurſeries, at a moderate price, and may be tranſplanted almoſt in any open weather from October till March.

In their arrangement in the ſhrubbery, the deciduous ſorts ſhould be diſpoſed principally with others of that tribe, and the *Lauruſtinuſes*, chiefly in the evergreen clumps, &c. though ſome diſtributed thinly towards the fronts of the deciduous compartments, will exhibit a lively variety in winter and ſpring; ſuffering the whole, both deciduous and evergreens to aſſume nearly their own natural growth, except juſt retrenching occaſional lower ſtragglers from the ſtem, and long, irregular, rambling ſhoots of the head.

But the *Lauruſtinuſes* are alſo often employed to plant againſt unſightly walls, or other diſagreeable fences in fore-courts, and other compartments near the main dwelling, &c. to hide their deformity from ſight, by their perpetual verdue, and where they will alſo flower profuſely, and have a very ornamental effect.

Sometimes alſo the Lauruſtinus is planted as detached objects in borders and capacious, ſpaces of graſs ground, and there ſometimes trained to a ſingle ſtem, a foot or two high, and encouraged to branch out into a cloſe buſhy round head: in which it has a pretty effect, both as an evergreen and flowering ſhrub

*Method of Propagation.*

Many of the ſorts may be propagated by ſeeds; all of them by layers, and many of them alſo by cuttings.

By Seeds.—Moſt of the deciduous kinds may be raiſed abundantly from ſeeds in the open ground; ſome of them producing plenty of berries in England, others not, and thoſe of moſt of the ſorts may be had of the ſeedſmen; all of which may be ſowed in autumn or ſpring, in beds of common earth, and covered an inch deep; they will come up, ſome the firſt year, others not till the ſecond; and when the plants are a year or two old, plant them out in nurſery rows to remain till wanted.

By Layers.—All the ſorts, both deciduous and evergreen kinds, grow freely by layers, which is the moſt expeditious mode of propagating them, and may be effected in autumn, winter, or ſpring, though the ſooner the better; chuſing for this purpoſe the young lower branches, lay them and peg them down in the earth in the common way; they will all readily emit roots in ſpring and ſummer, fit for tranſplanting next autumn.

By Cuttings. — Moſt of the deciduous kinds, particularly, grow tolerably well by cuttings; though all the ſorts both deciduous and evergreen kinds may be tried by this method; it is ſoon done, and autumn is the proper ſeaſon; chuſing cuttings of the robuſt young ſhoots, cut into moderate lengths, and plant them in any moiſt border in rows, many of them will root and ſhoot at top next ſummer, and form tolerable little plants the ſame year.

VICIA.

Vetch or Tare, including alſo the Faba or Bean.

They are hardy herbaceous annuals and perennials, principally for œconomical purpoſes, as the common Vetch for fodder to cattle, and the ſeeds for poultry, &c. and the Bean, both as a fine ſummer eſculent for the table, to eat when green and young, and when dry to feed horſes and hogs, &c. though ſome ſorts, alſo both of the Vetch and Bean kinds, are proper to diverſify the compartments of the pleaſure-ground; all of which are of the fibrous-rooted tribe, and moſtly riſe with annual ſtalks, ſome long and trailing as in moſt of the Vetch kinds; others erect, as in all the Bean tribe; garniſhed moſtly with pinnated leaves of ſeveral pair of lobes, and papilionaceous flowers along the ſides of the branches.

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX, is monophyllous, tubulous, and five-parted at top.—COROLLA, is papilionaceous, with an oval, broad vexillum, reflexed on the ſides, two almoſt heart-ſhaped wings, and ſhort keel, with an oblong, two-parted claw or tail.—STAMINA, ten diadelphous filaments, having roundiſh, four-furrowed, erect antheræ.—PISTILLUM, a long, narrow, compreſſed germen, filiforme ſtyle, and obtuſe ſtigma, bearded underneath. —PERICARPIUM, a long, leathery, bivalvular pod of one cell, containing ſeveral roundiſh and compreſſed ſeeds.

There are about eighteen ſpecies of *Vicia*, moſtly of the Vetch Tribe, and only one ſpecies of the Bean, which comprehends many varieties.

*Vetch Kinds.*

There are many ſpecies of the Vetch, though only a few of them have merit for general culture; ſome to cultivate in the fields to cut green for fodder, and to ſtand to ripen ſeed, (Tares) to feed pigeons and other poultry, hogs, &c. and ſome to cultivate in gardens for variety; conſiſting of annuals, biennials, and perennials, moſtly with long, ſomewhat trailing, or climbing ſtalks, and ſome erect; all garniſhed with pinnated leaves of many pair of ſmall lobes, terminated moſtly by cirrhi or tendrils for climbing; and flowers generally from the ſides of the branches, either ſingly or by twos, or many together on each peduncle, in

in ſpikes, &c. ſucceeded by oblong pods filled with ſmall roundiſh ſeeds.

The moſt remarkable ſpecies for uſe or variety are,

[1] VICIA *Sativa. (Annual.)*

*Common cultivated Vetch or Tare.*] Riſes with weak, angular, ſtreaked, declinating ſtalks two or three feet long, garniſhed with pinnated leaves of ſeven or eight pair of oblong blunt lobes, and ſpotted ſtipula; and purple flowers generally two together, ſucceeded by erect pods in pairs, containing a few round ſeeds.

*Varieties.*] Common purple-flowered as above — White-flowered — Early ſummer Vetch—Black-ſeeded—White-ſeeded, &c.

This ſpecies is the ſort of Vetch or Tare that is commonly cultivated in fields, to cut green for ſummer fodder, which is excellent feed for horſes, &c. and ſome alſo to ſtand to bring forth ſeeds for the uſes before hinted.

[2] VICIA *Biennia. (Biennial.)*

*Biennial multiflorous Siberian Vetch.*] Grows five or ſix feet long, having large pinnated leaves of ten or twelve or more ſpear-ſhaped, ſmooth lobes on furrowed foot-ſtalks, and each peduncle having many light-blue flowers, ariſing at the ſides of the branches, ſucceeded by ſhort compreſſed pods.

[3] VICIA *Sylvatica. (Perennial.)*

*Wood multiflorous Vetch.*] Riſes with cirrhoſe, climbing ſtalks, five or ſix feet long; pinnated leaves of ſeven or eight pair of oval lobes, and denticulated ſtipula, and each peduncle ſupporting many pale-blue flowers; grows wild in England, &c. in woods and among buſhes and hedges.

[4] VICIA *Cracca.*

*Cracca or Tufted Vetch.*] Riſes with climbing ſtalks five or ſix feet long; pinnated leaves of ten pair of ſpear-ſhaped, hairy lobes, and entire ſtipula; and peduncles ſupporting each many blue imbricated flowers. Is a native of England and moſt parts of Europe.

[5] VICIA *Caſſubica.*

*Caſſubian Ligneous Vetch.*] Hath trailing ſtalks two or three feet long, becoming ſomewhat ligneous; pinnated leaves of eight or ten pair of oval, acute, lobes, and entire ſtipula; and each peduncle having about ſix pale-blue flowers. Is a native of Germany.

The above five ſpecies are the moſt noted ſorts of the Vetch or Tare kind, ſome of which being in great eſtimation for field culture, to produce green fodder as before noticed; but the firſt ſort, in particular, having the moſt ſucculent ſtalks, are in moſt eſteem for general culture, being generally cut whilſt the ſtalks are green and tender, till they come into flower in June and July.

They are alſo ſometimes introduced into gardens, as climbers, for variety, eſpecially to diverſify wood-walks, thickets, &c. to climb upon the ſhrubs and buſhes; ſowing the ſeed in the places where the plants are deſigned to remain, and they will readily come up and flower ornamentally in ſummer. See their *Propagation* below.

As all the ſorts riſe with long weak ſtalks, ſomewhat reſembling the pea tribe, they either trail on the ground or climb upon any adjacent ſupport, or upon one another, by means of their cirrhi or claſpers, at the termination of the leaves; and by which they mount upon buſhes or hedges, &c. ſeveral feet high, ſhooting up into ſtalk in ſpring, and flower in June or July; all producing papilionaceous or butterfly-ſhaped flowers, ſome but two on each peduncle, and ſome many as before obſerved, ſucceeded by longiſh pods of the leguminous kind, containing round ſeeds, ripening in autumn.

*Method of Propagation, &c.*

All the ſorts are eaſily propagated by ſeeds, ſowed principally where the plants are to remain in autumn or ſpring, both for field-culture and in gardens.

For Field Culture.—They are ſowed both in autumn or ſpring occaſionally: when intended to raiſe a crop to cut for early fodder, they are often ſowed in autumn, about Auguſt or early in September; in order that they may come up ſoon after the ſame year, and afford an early cutting next ſummer; though they may alſo be ſowed in ſpring both for fodder and to ſtand to produce ſeed or Tares; remarking, however, the ſummer Vetch in particular, being ſomewhat tender, ſhould never be ſowed till the ſpring; obſerving in ſowing the different ſorts, that the common allowance of ſeed is generally about two buſhels to an acre, which may either be ſowed broad-caſt and ploughed or harrowed in, or in drills, two or three feet aſunder, and earthed over an inch or two deep: that by ſowing them in drills, the ground can be readily hoed between by horſe or hand hoeing, to kill weeds, and land up the plants, as practiſed for peas.

For Garden Culture.—When intended to cultivate any of theſe plants in gardens for variety; ſow the ſeeds in autumn or ſpring in the borders of ſhrubberies, wood-walks, wilderneſſes, thickets, &c. in the places where they are to remain, in patches near the ſhrubs and buſhes to climb thereon, or in open ſpaces to climb upon ſticks.

*Faba or Bean Kinds.*

To this genus *Vicia*, is now added the article *Faba* or Bean, formerly conſidered as a diſtinct genus; but its general characters proving the ſame as the Vetch, the botaniſts have lately ranged it as a ſpecies of that family, by the name of *Vicia Faba*; conſiſting of but one ſpecies only, which, however, compriſes numerous varieties, and is ſuppoſed the Common Field or Horſe Bean is the original ſort, and parent of all the other varieties commonly called Garden Beans.

VICIA *Faba.* (*Annual.*)

*Faba or Bean.*] Hath fibrous roots, upright, thick, ſucculent, firm ſtems, riſing from one or two to four feet high or more; garniſhed with large winged ſucculent leaves of two or three pair of large lobes, without cirrhi or claſpers; and numerous papilionaceous flowers all along the ſides of the ſtalk, ſucceeded by long, compreſſed pods, containing the Beans.

It is a hardy herbaceous annual, and ſaid to be originally a native of Ægypt; but all the varieties have been long inhabitants of our gardens, and grow freely any where in the open ground.

*Varieties.*] There are numerous ſorts of Beans, all varieties of the ſame ſpecies (*Vicia Faba*) for their general growth and ſtructure, foliage, flowering, fruiting, &c. are exactly the ſame, and only vary more or leſs from one another in their ſize of growth, ſize of the leaves, pods, and Beans, times of attaining perfection, domeſtic properties, &c. for all the different varieties are ſubject to vary exceedingly; and as in the Common Field or Horſe Bean, we ſhall often find ſome among them that vary conſiderably from the original, both in ſubſtance of ſtalk and pods; and from theſe variations the different varieties of Garden Bean were firſt obtained, and by degrees improved by culture to their preſent ſtate of perfection; all of which are alſo very apt to vary from one to the other, unleſs ſome attention is obſerved in ſaving the ſeed Beans from the beſt plants of the reſpective varieties; conſiſting of the following ſorts, arranged under three heads, according to their growth and times of attaining perfection, viz. Small early kinds.—Middling kinds.—And large late kinds.

*Small Early Kinds.*

Thoſe under this head are of the loweſt growth, riſing only from about a foot and half to two and a half high, and ſome that ſcarely obtain a foot ſtature; but all very great bearers with ſmall pods and Beans, and are valued for arriving earlier to perfection than any other ſorts; and are therefore proper to plant on warm borders in autumn and winter for the early crops to gather in the middle or end of May, and in June.

*Early Mazagan Bean.*] Grows but half a yard or two feet high, with ſlender ſtalks fully loaded from bottom to top with very ſmall pods, arriving to perfection in May or beginning of June.

This is the ſmalleſt and earlieſt of all the tribe of Beans.

*Early Portugal or Liſbon Bean.*] Grows two feet high or more, with ſomewhat ſtronger ſtalks and larger pods than the Mazagan Bean, arriving to perfection a few days after that ſort.

*Small Spaniſh Bean.*] Grows ſtronger than the two former, with ſomewhat larger pods and Beans, arriving to perfection ſoon after the Portugal Bean.

*Dwarf Fan or Cluſter Bean.*] Grows low, with ſeveral ſpreading ſtems from ſix to ten or twelve inches high, very fully loaded with ſmall pods.

This is chiefly planted for variety or curioſity.

Moſt of theſe ſmall Beans if gathered while young, eat very ſweet and palatable; particularly the firſt three ſorts, but if ſuffered to attain full growth, or become the leaſt black-eyed, they eat dry, coarſe, and of a diſagreeable reliſh.

Theſe kinds have merit principally to plant for the earlieſt crops, and the firſt two or three ſorts, are the moſt eligible for that purpoſe; but the Mazagan kind is the earlieſt of all, proper to plant for the firſt crop, and the Portugal and Small Spaniſh Bean next; all of which are proper for planting early on warm ſouth borders, or other ſheltered ſunny expoſures, under or near walls, pales, or hedges, every month from October till December or January; in order that if the

the firſt planting ſhould fail by inclement weather in winter, the others may ſucceed; and if all the crops ſhould ſurvive the froſt, they will ſucceed one another regularly in bearing; planting them in rows, ranging ſouth and north two feet and a half aſunder, an inch and half deep, and two or three inches apart in each row; likewiſe may plant one row length-ways cloſe along under the wall, &c.

But as to the Dwarf Bean, it is not proper to be planted for any general crop, only a few for variety; and for which purpoſe it may be planted either in autumn or winter, or in any of the ſpring or ſummer months till June or July, in rows two feet aſunder, or in patches about the borders.

*Middle Size Later Beans.*

Theſe ſorts are of ſtronger and taller growth than thoſe of the former claſs; they riſing with ſtalks from two feet and half to a yard or more high, producing longiſh, middle-ſized pods of different lengths and thickneſs in the different ſorts; being proper to plant for the firſt main crops, any time from November or December till February or March, to ſucceed the ſmall early Beans, and will arrive to perfection for the table in June and July.

*Long Podded Bean.*] Riſes with ſtronger ſtems, a yard or more high; a remarkable great bearer, producing very long, narrowiſh pods cloſely filled with oblong, middle-ſize Beans.

*Varieties of this are.*—Early long-podded Bean. —Tall long-podded Bean. — Turkey long-podded Bean, riſing with ſtronger ſtalks producing the largeſt pods and Beans.

All theſe long-podded Beans are remarkable great bearers, very profitable for a family and market, and if gathered for uſe while they are moderately young, they will eat tolerably ſweet and well flavoured.

*Broad Spaniſh Bean.*] Grows moderately ſtrong, a yard or more high, producing broadiſh pods and Beans; is a very good bearer, and the Beans boil tender and well flavoured.

*White-bloſſomed Bean.*] Grows two feet and half high, producing entire white flowers, and great abundance of ſmalliſh, long, narrow pods, filled with oblong Beans.

This is a good bearer and an excellent table Bean, remarkable for boiling green and tender.

*Red-bloſſomed Bean.*] Riſes with firm ſtalks two feet and half high, producing entire red bloſſoms, ſucceeded by ſmalliſh pods and Beans, not near ſo palatable to eat as the white bloſſom kind.

Other leſs material varieties of middle-ſize Beans are Nonpareil Bean — Mumford Bean, —Black-bloſſom Bean. — Green Venetian Bean.

Remark, that of the above varieties of Bean ranged in this claſs, the firſt three ſorts, Long Pods, Broad Spaniſh, and the White-bloſſomed Bean, are the beſt for general culture; though ſome of all the others may alſo be planted occaſionally for variety and experiment; and the ſeaſon for planting all the ſorts is, that for the firſt crop may plant in November or December on ſome broad warm border, or in any of the moſt ſheltered kitchen-garden quarters, in rows a yard aſunder; repeating the planting every month till March in the open quarters or in fields, &c. after that if a longer ſucceſſion of thoſe ſorts is required, plant ſome every three weeks in an open expoſure, till May or June.

*Larger Late Kinds, commonly called Broad Beans.*

Theſe are the ſtrongeſt growers of all of the kinds; they riſe with thick ſtems three feet and half high or more, producing large broad pods with Beans proportionably large; and are ſuperior to all the others to plant for the general crops, to ſucceed the long pods, and others of that claſs; being proper to plant principally in the ſpring, or at leaſt not earlier than December or January, for the firſt crop; and for the general crops, ſhoud be planted every month or three weeks, from January or February, until May; and they will arrive to perfection in July and Auguſt, and are all moſt excellent family beans, and always the moſt ſaleable in market.

*Sandwich Bean.*—Grows three feet and a half high, or more, producing large, broad pods, and oblong broadiſh Beans; and bears abundantly.

*Toker Bean.*—Grows ſtrong, three feet and a half high, or more, producing long broadiſh pods, and large oblongiſh Beans, and the plants bear very plenteouſly.

*Windſor Bean.*——Riſes with very large, ſtrong ſtems, three or four feet high, bearing very large, broad pods, having very large

large, roundiſh Beans, the largeſt of all the Bean tribe, and the moſt excellent for eating.

Of this claſs of large Beans, the Sandwich and Toker kinds, being of leſs ſucculent growth than the Windſor, are rather hardier, and may be planted earlier, that is, before Chriſtmas, for the firſt crop; and any time till April or May, if required; but the Windſor may alſo be planted any time in January and February, in open weather; and thence every three or four weeks, till the end of April, for the main crops; or may continue planting them till the end of May, to continue the ſucceſſion of theſe kinds for the table as long in the ſeaſon as poſſible.

All of which large kinds of Beans ſhould be planted in open expoſures in gardens and fields; the firſt plantings before or ſoon after Chriſtmas may be in the moſt ſheltered, dry ſituation; after that the ſucceſſion crops may be planted in any open place, generally planting them by dibble in rows, a yard aſunder, or three feet and a half for the large Windſor Beans, four or five inches aſunder in each row, and three inches deep.

*General Obſervations.*

All the varieties of Bean in the above three claſſes, are hardy, herbaceous annuals, that will grow in any common ſoil of a garden, and in the open fields; are all raiſed annually from ſeed, planted at ſeveral different times, from October till May, in order to obtain a ſucceſſion of young green Beans for the table three or four months in ſummer; for by planting early and late kinds every month, from October or November until March; and every three weeks or fortnight, from Mareh till May, June, or July, a conſtant ſucceſſion of young Beans is obtained from the latter end of May until September, or beginning of October; though as to the general planting ſeaſon, that after having planted a few of each ſort before Chriſtmas, to come in early, the main crops are plant d in January, February, March, and Apr; and the general ſeaſon of Beans in full p- fection of bearing and goodneſs, is Jun, July, and Auguſt.

As therefore the utility of Garden-Beans, both for private uſe, and ſupply of the markets, is very conſiderable for about three months in ſummer, a principal ſhare of kitchen-garden ground and field-land ſhould be allotted annually for the culture of ſeveral different crops, ſucceeding one another in bearing in regular ſucceſſion from May or June till Auguſt or September, as before obſerved.

They will all grow freely in any common fertile ſoil, in a garden or field, but ſhould be allowed always an open, free ſituation, not much overſpread with trees, &c. which would draw them up weak and tal, without yielding any conſiderable produce; generally allowing the warmeſt ſituations for the early crops before Chriſtmas; but the ſucceeding ones may after that time be planted in any open expoſure; and for the late plantings in May and June, &c. ſhould generally chuſe the moiſteſt ſtrong land.

As to the general method of planting and and culture: all the ſorts muſt be planted in rows, the diſtance before mentioned, according to the ſize of the Beans, planted either by dibble, or laid in drills; or for early planting in dry ground, may firſt draw ſhallow drills, then plant the Beans in a row along the bottom; allowing from two to four or five inches diſtance in the row, and from one and a half to three inches deep; and when the plants are come up two or three inches high, land them up on each ſide of the row with a drawing hoe; and after having advanced nearly to full growth and in bloom, it is proper to top the plants in general, which throws all the nouriſhment to the embryo pods, and greatly promotes their ſetting, and forwards their growth; and in the latter crops prevents their being ſo much anoyed with the ſmall black fly.

## VINCA.

*Pervinca*, or Periwinkle.

This genus is compoſed of ſhrubby evergreen trailers and upright growers, for the ſhrubbery and ſtove collections, having all durable ſtems, and branches adorned with oval, oblong, and ſpear-ſhaped, ever-green leaves; and monopetalous, ſalver-ſhaped, five-parted flowers, at the axillas of the ſtalk branches.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX is divided into five parts, and permanent.—COROLLA, is monopetalous, and hypocrateriform, or ſalver-ſhaped, tubular below wirh a horizontal, broad-ſpreading brim, cut into five obtuſe ſegments.—STAMINA, five ſhort inflexed filaments, having obtuſe, erect, membranaceous antheræ.—PISTILLUM, two roundiſh germens,

germens, terminating in one cylindric ſtyle, larger than the ſtamina, having two ſtigmas, one orbicular, and the other headed, and concave.—PERICARPIUM, two long, taper, erect follicules, of one longitudinal valve, containing many oblong, cylindric ſeeds.

There are four ſpecies of *Vinca*, three of them common to the Engliſh gardens, two of which are hardy, trailing, and declinated plants for the ſhrubbery; the other is an upright, tender ſhrub for the ſtove collection; and are all of the ever-green tribe.

*Hardy Kinds.*

Theſe have ſlender ſtalks, ſome that trail and extend along the ground, branching numerouſly, and cover the ſurface; others grow more erect, with declinated branches; and conſiſt of two ſpecies, both evergreens, and natives of England, &c. growing wild, under buſhes, hedges, and in woods; but are introduced into moſt of our eminent ſhrubberies, to plant as trailers in particular departments, between ſhrubs, to overſpread the ground, and occaſionally to mount erect upon ſupport, and form a buſhy growth.

[1] VINCA *Minor.*

*Minor or ſmaller Periwinkle.*] Hath ſlender, ligneous, trailing, green ſtalks, branching and running conſiderably along the ground, emitting roots at the joints; garniſhed with oval, ſpear-ſhaped, thick, ſmooth, ſhining-green leaves, in pairs oppoſite; and flowers growing ſingly on proper peduncles, at the ſides of the branches, of different colours in the varieties.

*Varieties are.*] Common green Periwinkle with blue flowers—With white flowers—Double blue flowers—Double white flowers—Double purple flowers—Yellow-ſtriped-leaved, with flowers of all the above colours—White ſtriped-leaved, with flowers of different colours.

[2] VINCA *Major.*

*Major or Large Green Periwinkle.*] Riſes with ſhrubby, ſomewhat erect, green ſtalks, a foot or two high, with the tops inclining to the ground; large, oval, ſhining-green leaves, in pairs oppoſite; and large blue flowers ſingly on foot-ſtalks at the axillas of the branches.

*Variety.*] With white flowers.

Both the ſpecies are perennial in root, ſtem, and branches, with leaves in perpetual verdure, and begin flowering in the ſpring, about March and April; the flowers moderately large, each being of one ſalver-ſhaped petal, ſpreading at the brim, and cut into five parts; generally continue flowering in ſucceſſion ſeveral months, and even ſometimes in winter, in mild ſeaſons, eſpeciall the *Vinca Major*.

As both the ſpecies and their reſpective varieties are very hardy plants, that proſper under trees and buſhes, even in cloſe thickets, &c. and ſpread and cover the ground; they are proper to plant towards the fronts or verges of ſhrubbery clumps, wilderneſſes, and thickets, between the trees and ſhrubs, next the walks, and on the ſides of ſhady banks, &c. diſpoſed, ſome to over-run the ſurfaee between the ſhrubs, in particular places contiguous to ſhady walks, &c. others in patches, to run and entangle with one another in tufts; and ſome planted entirely detached, particularly the *Vinca Major*; and ſupported with ſtakes, and trained with an erect ſtem a little height, and encouraged to branch out above into a buſhy head; in all of which modes, diſtributing them in the ſeveral plantations, they will encreaſe faſt in growth, and effect a very pretty variety at all ſeaſons of the year.

They are all expeditiouſly propagated by layers, cuttings, and ſuckers.

By Layers.—Their trailing branches being layed in the ground any how, at almoſt any ſeaſon, they will moſt readily take root; and thoſe of the *Vinca Minor* particularly, multiply exceedingly without care; for the trailing ſtalks root in the ground at every joint as they extend along, furniſhing numbers of good-rooted plants in one ſummer, fit to plant off in autumn.

By Cuttings.—All the ſorts will alſo readily grow by cuttings of the ſtalks and branches, planted in autumn or ſpring, in a ſhady border, and they will be well rooted by the following autumn.

By Suckers.—They naturally ſend up ſuckers from the root in ſummer, which may be taken up with roots any time in open weather, from autumn till ſpring, and planted where they are to remain.

*Tender Stove Kind,*

Conſiſts of one ſhrubby ſpecies, a native of Madagaſcar, and is retained here in ſtoves, as an elegant evergreen, and beautiful flowering ſhrub.

[3] VINCA *roſea.*

*Roſe*

*Roſe Periwinkle of Madagaſcar.*] Riſes with an upright, ſhrubby, ſmooth, branching ſtem a yard or more high; having a browniſh bark; oblong-oval, ſmooth, firm leaves, placed oppoſite; and large beautiful, roſe-like, crimſon, and pale-red flowers, ſingly and in pairs at the ſides of the branches being large, ſpreading above and divided into five ſegments; appearing very ornamentally from ſpring till winter, ſucceeded by ripe ſeeds in the autumn.

This elegant little ſhrub being an inhabitant of the hot parts of Africa, in this country muſt always be kept in pots, in order to be retained in the ſtove; in which it will flower annually in great abundance, managing it as directed for other ſhrubby exotics of the ſtove. See STOVE PLANTS.

It is propagated by ſeed and cuttings, aſſiſted by a hot-bed.

By Seed.—Sow it in the ſpring in a pot of light rich earth, half an inch deep, and plunge the pot in a hot-bed or in the bark-bed in the ſtove; and when the plants are come up about three inches high, prick them ſeparately in ſmall pots and plunged again in a hot bed, &c. giving occaſional ſhades from the ſun, and proper waterings; and as they advance in growth ſhift them into larger pots and keep them always in the ſtove.

By Cuttings.—In ſpring or ſummer take off ſome cuttings of the young ſhoots, plant them in pots; and plunge them in any hot-bed or in the bark-bed, and they will root the ſame year fit to pot off ſeparately, and managed as directed for the ſeedling plants.

## VIOLA.

Violet.

There are many ſpecies of Violets, moſtly very low, herbaceous, fibrous-rooted perennials and annuals, ſome conſidered as flowery plants to adorn the fronts of borders, others for variety and medical purpoſes, riſing with cluſters of leaves and ſhoots but a few inches high, and low ſtalks the ſame height, crowned with ſmall, irregular, pentapetalous flowers.

Claſs and order, *Syngeneſia Monogamia.*

*Characters.*] CALIX is pentaphyllous, with the leaves oval-oblong, ſharp at top and obtuſe at the baſe; differently arranged in the different ſpecies, and perſiſtent.— COROLLA, is irregularly formed of five unequal petals, the upper one is broadeſt, obtuſe, and emarginated, having a corniculated or horned nectarium at the baſe; the two ſide-petals equal, obtuſe, and oppoſite, and the lower ones larger and reflexed upward.— STAMINA, five ſmall filaments, two of them placed at the upper petal, entering the nectarium by their annexed appendages; and obtuſe antheræ that generally coaleſce or connect.—PISTILLUM, a roundiſh germen, ſlender ſtyle and oblique ſtigma.— PERICARPIUM, an oval, trigonous, obtuſe, trivalvous capſule of one cell, containing many oval ſeeds.

There are more than twenty ſpecies of Violets, moſtly very low, herbaceous plants; many of them natives of England, and other different parts of Europe, and of America; and but only a few of them have merit as garden plants for ornament or variety, conſiſting of ſome perennials and an annual; comprehending the Common Violet, &c. Heart's Eaſe or Panſies.

### *Perennial Kinds.*

Conſiſt of the common odoriferous Violet and varieties, and three or four others of inferior value, all hardy perennials of humble growth.

1 VIOLA *Odorata.*

*Odoriferous or Common Sweet-ſcented March Violet.*] Hath a fibrous perennial root, ſending up a cluſter of heart-ſhaped leaves and ſmall, creeping, rooting ſhoots; and amongſt them riſe ſlender naked peduncles, three or four inches high, crowned with the flowers of different colours in the varieties, appearing in March.

*Varieties are.*] Common blue flowered—Pale-purple-flowered — White-flowered — Double blue-flowered—Double white-flowered.

The flowers of all the varieties impart a fine ſweet odour and are uſed in medicine; though the ſingle flowered kinds are the moſt odoriferous; but the double flowered varieties are largeſt and the moſt conſpicuous to ſight.

It grows naturally in woods, and under hedges, &c. in England and moſt parts of Europe, but has been a long reſident of gardens as a flowery plant, and for its flowers to uſe in medecine.

2 VIOLA *Hirta.*

*Hairy Inodorous Violet.*] Hath a fibrous, perennial,

perennial root, crowned with heart-ſhaped, hairy, hiſpid leaves; and amongſt them ſlender peduncles, a few inches high, terminated by larger blue flowers, like the common ſort, but without odour; grows wild in woods and hedges in England, &c.

[3]VIOLA *Palmata.*

*Palmated Virginia Violet.*] Hath a perennial root, crowned with five-lobed, palmated, or hand-ſhaped, indented leaves, and low peduncles, ſupporting white flowers in May or June.

[4]VIOLA *Montana.*

*Mountain upright Auſtrian Violet.*] Hath a perennial root; erect ſtalks a foot high; heart-ſhaped, oblong leaves; and purple flowers at the axillas of the branches; in April and May.

[5]VIOLA *Calcarata.*

*Calcarated Yellow Alpine Violet.*] Hath a perennial root, ſending up very ſhort ſtalks, four or five inches high, garniſhed with oblong, oval leaves: and ſlender peduncles, ſupporting yellow flowers ſtreaked with purple; having long ſpur or awl-ſhaped nectariums, longer than the petals; flowering moſt part of ſummer.

*Varieties.*] Common yellow purple-ſtreaked-flowered—Plain yellow-flowered—Purple-flowered.

Of the above five ſpecies of perennial Violets, the firſt ſort (*Viola ordorata*), is the moſt remarkable, being highly eſteemed for its ſweet-ſcented flowers; and is proper to plant on the verge of ſhrubberies, wood-walks, and in tufts or patches; and as to the other four ſpecies, although their flowers are without ſcent, they, if arranged in concert with the varieties of the common ſort, will effect an agreeable diverſity.

Though when the common Violet is intended to be cultivated for its flowers to gather, it may be planted in beds, or borders, alone; in rows, a foot aſunder, and they will ſoon encreaſe into large bunches.

They all flower in great abundance every year in their reſpective ſeaſons; the flowers are ſmall, irregular, and conſiſt each of five unequal petals; continuing in ſucceſſion three or four weeks, and are ſucceeded by ripe ſeeds in ſummer and autumn.

The propagation of all the ſorts is by parting the roots, and ſometimes by ſeed.

By Parting the Roots.—They all multiply by the roots; and the common Violet and the other creeping kinds propagate alſo abundantly by their repent ſhoots rooting in the earth; they may be parted or ſlipped in ſpring, ſummer, or autumn, as ſoon as they have done flowering, in moiſt weather, or early in ſpring; when each plant may be ſlipped, or divided into ſeveral ſlips, not too ſmall; and planted either at once to remain, or the weakeſt may be planted in nurſery-beds, to have ſummer's growth; and in either method each ſlip will ſoon encreaſe into a large tuft, and flower abundantly next year.

By Seed—Sow it either ſoon after it is ripe, or early in the ſpring, in a bed or border of light earth, and raked in; and when the plants are come up an inch or two high in ſummer, prick them out in a ſhady border, to grow till October, and then planted out finally to remain.

*Annual Kind.*

One ſpecies only come under this head; a well-known, little, tufty, very flowery plant, commonly called Heart's Eaſe, or Panſey; and is generally conſidered as an annual, becauſe it often periſhes the ſame year it is produced; yet it alſo ſometimes proves of a biennial or perennial nature, remaining in ſtalk and leaf all the year, in favourable ſeaſons.

[6]VIOLA *tricolor.*

*Violet tricolor, or three-coloured Violet, commonly called Heart's Eaſe, or Panſey.*] Hath a fibrous root, ſending up ſlender, triquetrous, or four-ſquare ſtalks, branching diffuſely, from ſix to ten or twelve inches high, aſſuming a buſhy, tufted growth; garniſhed with ſmall, oblong-oval, cut leaves; and at the axillas of the branches numerous variegated, tricoloured flowers, yellow, purple, and white; appearing in conſtant ſucceſſion all ſummer and autumn: grows naturally in cultivated places in the North of England, &c.

*Varieties.*] Low growing, with ſmall flowers.—Larger, upright, with large flowers.—Variegated, yellow, purple and white-flowered——Yellow-flowered, with purple ſpots—Purple, with yellow or white ſpots—White, with yellow and purple ſpots——Scentleſs flowered—Sweet-ſcented flowered.

All the varieties flower very profuſely, and variegated many different ways in the ſame

plant; and the moſt prevailing colours are yellow, purple, blue, and white; ſome of which being of a fine velvetty hue, particularly the purple; varying in different flowers; and all of which are ſucceeded by abundance of ſeed which ſoon ſcatters itſelf in the adjacent ground, and from which numbers of plants naturally riſe, without care of culture.

This elegant little plant merits culture in every garden, for the beauty and great variety of its tricoloured flowers; and it will ſucceed any where in the open borders, or other compartments, diſpoſed in patches towards the front; either by ſowing the ſeed at once to remain, or by putting in young plants previouſly raiſed in a ſeed-bed; they will begin flowering early in ſummer, and will continue ſhooting and flowering in ſucceſſion till winter; and even during part of that ſeaſon, in mild weather.

It is eaſily propagated by ſeed, ſowed either at once, where they are to remain, or for tranſplantation; and when once a few plants are raiſed, and have flowered and ripened ſeeds, they will naturally ſow themſelves, and produce a conſtant ſupply of plants.

However, the ſeaſon for ſowing them is in autumn and ſpring; the autumn ſowings come up the ſame year, ſtand the winter, and flower early in the ſpring following; and the ſpring-ſowed plants ſucceed them in flowering, and continue till winter. Sow them either in patches about the borders, half an inch deep, to remain; or in a bed or border, broad-caſt, and raked in; and when the plants are advanced two or three inches high, prick them out, to remain to flower, one or two plants in each patch, which will ſoon encreaſe into a large tuft.

VISCUM, Miſletoe.

An hardy, evergreen, paraſitical ſhrub, the branches are dichotomous, with obtuſe ſpear-ſhaped leaves, producing flowers growing in ſpikes and white glutinous berries.

Claſs and order, *Dioecia Tetrandria.*

*Characters.*] CALIX of the male flower is compoſed of four oval equal leaves.—COROLLA, none.—STAMINA, filaments, but form oblong pointed antheræ, each growing to a foliole of the calix.—The female flowers conſiſt of a CALIX, compoſed of four ſmall leaves, which are oval ſeſſile, deciduous, and ſitting on the germen.—COROLLA, none.—PISTILLUM, an oblong, three-cornered germen, ſituated under the receptacles with no ſtyle, having only an obtuſe ſtigma.—PERICARPIUM, a round ſmooth berry with one cell, containing a ſingle obcordated, obtuſe, carnoſe, and compreſſed ſeed.

We know but of one ſpecies.

VISCUM *Album, Miſſeltoe.*

Hath woody branches of a yellowiſh colour; they uſually grow in pairs, in a ſort of a forked manner, dividing from near the baſe of the main ſtem, and annually ſubdividing in a dichotomous form; at the joints of the diviſions grow the leaves, which are ſpear-ſhaped, obtuſe, of a thick conſiſtence and yellowiſh green, continuing all the winter; the flowers are produced in ſhort ſpikes from the wings of the branches, they are ſmall, and of a yellowiſh colour, they are ſucceeded by a large white viſcous tranſparent berry, which is ripe in the winter.

*Propagation.*

The propagation of this plant is by its ſeeds when the berries are full ripe; but as they will not grow by any means in the natural earth, being always found either on aſh, maple, apple, &c. trees, growing out of their branches, therefore to encreaſe them the following method ſhould be uſed: chuſe a fine ſmooth place of the tree, which you would wiſh them to grow upon; on the part thus choſen ſtick a few berries, their glutinous matter will affix them, though it would not be amiſs to cut the outer bark with a knife, and for a greater chance of ſucceſs, (as they do not always ſucceed), ſeveral branches of the ſame tree may be ſerved in the ſame manner. I have ſome reaſon to think that the ill ſucceſs which frequently attends the propagation of theſe plants by art is owing to the choice of the berries, for as they are of the dioecious claſs, bearing male and female flowers on different plants; the berries frequently gathered from male plants which not being near a female plant when in bloom may be deprived of the *farina fœcundans*, ſo neceſſary for vegetation; therefore in the choice of berries they ſhould be taken from female plants which grow near to thoſe of the other ſex.

The miſſeltoe is encreaſed in the woods chiefly by birds, particularly the thruſh, who in

in carrying the berries from tree to tree, and lodging ſome of them they adhere to the bark, and grow. This plant is ſaid to be poſſeſſed of many excellent virtues, and is uſed in nervous diſorders, &c.

VITEX. *Agnus Caſtus*, or Chaſte Tree.

Of this genus there is one hardy ſpecies cultivated in our ornamental gardens; theſe are ſhrubs furniſhed with digitated leaves and flowers growing in ſpikes.

Claſs and order, *Didynamia Angioſpermia.*

*Characters.*] CALIX, a ſhort cylindrical monophyllous perianthium, indented in five parts.—COROLLA, a ringent petal, with a ſlender cylindric tube; the limb is bilabiated, both lips are divided into three ſegments, the middle one being broadeſt.—STAMINA, four capillary filaments, two of which are ſhorter than the others, having verſatile antheræ.—PISTILLUM, a roundiſh germen a ſlender ſtyle, and two awl-ſhaped ſtigmas.—PERICARPIUM, a globular berry of four cells, each containing a ſingle oval ſeed.

This tree was much celebrated among the ancients, on a ſuppoſition, that the influence of it was conducive to chaſtity (whence the name); but the moderns know of no ſuch peculiar virtue as has formerly been aſcribed to it.

This ſpecies is

VITEX, *Agnus Caſtus, the Chaſte-tree.*

Hath pliable branches, whoſe joints are long, riſing to the height of about five or ſix feet; they are of a browniſh grey colour, and are garniſhed with digitated leaves, compoſed of ſeveral folioles, which are narrow and of a dark green colour, and ending in obtuſe points; the flowers are produced at the ends of the branches in whorled ſpikes, which are pretty long, and of a bluiſh purple colour; they appear in autumn, but are not ſucceeded by ſeeds in this country.

A variety of this is called the broad-leaved *Agnus Caſtus*, the folioles of which are broader, ſhorter, and ſerrated; in other reſpects there is ſcarce any difference.

This ſpecies is eaſily propagated either by layers or cuttings any time in the winter, and when they have rooted may be taken up in the ſpring and tranſplanted.

VITIS, Vine.

A genus of well known deciduous climbers, of which there are ſeveral ſpecies, one of which hath many much eſteemed varieties; the other kinds are more noticed for their climbing property and ſingularity than the fruit which they produce.

Claſs and order, *Pentandria Monogynia.*

Characters.] CALIX, a very ſmall perianthium, indented in five parts.—COROLLA, five ſmall petals, which are deciduous.—STAMINA, five ſubulate, erect, patent-falling filaments, with ſimple antheræ.—PISTILLUM, an oval germen without a ſtyle, crowned with a blunt capitated ſtigma.—PERICARPIUM, a large roundiſh berry of one cell, containing five hard roundiſh ſeeds, narrowed at the baſe.

Species.

[1]VITIS *Vinifera.*

*Vine or grape.*] This hath lobate, ſinuated, naked leaves, with herbaceous flowers, growing in a racemus which becomes a bunch of red, white, black, &c. berries.

*Varieties of this ſpecies are.*] (1.) *July Grape*, this hath a berry, ſmall, round, and black, ſlightly growing on the branches, but very little eſteemed, excepting for its earlineſs; it ripens ſoon in Auguſt.—(2.) *Black Sweet-water*, hath roundiſh berries, growing compactly together in ſmall bunches; they ripen in Auguſt: the flavour being rich, and ſkin thin, invites the birds, flies, &c. to prey on them, which (in time) ſhould be guarded againſt.—(3.) *White Sweet-water*, this is an exceeding fine flavoured grape when perfectly grown, but the berries being liable to outgrow each other, makes the whole bunch incomplete; this ripens about the end of Auguſt.—(4.) *Muſcadine*, this is one of the fineſt white grapes which ripen againſt the common walls in this climate; the bunches are large, the berries are round, and of a very rich flavour; this will ripen in September.—(5.) *Black Cluſter Grape*, hath hoary leaves, the bunches are ſhort and very compact; the berries are ſmall, and ripen the end of September.

*The following Varieties will not well ripen in this Climate without the Aſſiſtance of Glaſs, &c.*

(6.) *Black Frontiniac*, hath ſhortiſh bunches, the berries of which grow pretty cloſe together; when ripe are round and of a deep black colour, covered with a mealy bloom; the flavour of this grape is very rich, of a muſcat taſte, and in very hot ſummers will ripen naturally in October.—(7.) *Red or grizly*

ly *Frontiniac*, hath middling ſized bunches, the berries are round, of a red colour, and ſtriped; this grape when thoroughly ripe, is of a moſt rich and excellent flavour; it rarely ripens in this climate without the aſſiſtance of heat.—(8.) *White Frontiniac*, this is a high flavoured grape, and hath a peculiar rich juice when perfectly ripe; the bunches are large, and the berries, which are round, are very cloſely joined to each other, whereby they are apt to rot each other before they are ripe, which in ſome meaſure is owing to the thinneſs of their ſkins; it is therefore neceſſary to thin them out when they are about the ſize of peas, whereby the ſun and air will have freer admittance, and thoſe which are left will be larger, more handſome, and higher flavoured; this grape will not ſucceed without artificial heat —(9.) *Muſcat of Alexandria*, hath long bunches, with oval large berries; there are two ſorts, one with white, and the other with red berries; they are a fine grape, but require a hot-houſe to perfect the fruit.—(10.) *Hamburgh Red and Black*, hath very large bunches, the berries are large and inclining to an oval form; this grape will ripen tolerably out of the ſtove, if the autumn proves kind, but not before the end of October.—(11.) *Raiſin Grape*, hath very large bunches; the berries hang very looſely; they are of an oval form, but will not ripen here without being forced by artificial heat. (12) *Aleppo, or Syrian Grape.* The bunches of this grape are the largeſt yet known, ſome weighing at leaſt a dozen pounds, the berries are large and white, growing looſely; they are of a good flavour, and their ſkins being tough can be kept a conſiderable time after they are ripe; this kind ſhould be conſtantly kept in the ſtove.

The above enumerated varieties, which are of the moſt approved and eſteemed ſorts, are ſufficient to continue by forcing, and againſt the common walls, a ſucceſſion of fruit from May to November, the major part of them being the higheſt flavoured grapes hitherto known.

To theſe may be added ſeveral other varieties of this ſpecies; but as they are little eſteemed among the curious in fruits, the mentioning them may paſs unnoticed.

*Of their Propagation.*

The general propagation of grape Vines is either by layers or cuttings; the method of encreaſe by layers is practiſed as follows: in autumn or winter make choice of a ſtrong prolific ſhoot, of two years growth, ariſing from near the ground, and of the kind you would wiſh to propagate; let this ſhoot be bent down in the earth ſix or eight inches deep at the part where the laſt ſummer's ſhoot iſſued from; this ſhould be pegged down to prevent its being diſturbed and ſhortened at the top to two or three eyes; the next autumn following the layer will be ſufficiently furniſhed with roots for tranſplantation, when it may be cut from the parent plant, and placed where it is intended to remain: but to inſure the layer's ſucceſs by ſuch removal ſeveral perſons have trained them through the holes of flower-pots, in theſe they have taken root, and in the winter, if they are ſeparated from the mother plant, they may be turned out of the pot undiſturbed, and planted with the roots entire, where it may be thought proper. But the moſt preferable way to encreaſe this plant is by cuttings in the choice of which thoſe of a ſtrong vigorous growth, with the buds not far diſtant from each other, ſhould be preferred, obſerving, that ſuch cuttings have very thick turged, blunt buds, as theſe are moſt prolific, avoiding thoſe which are not well ripened, or have their buds pointed. In taking off ſuch cuttings, it is proper to cut them an inch or two in the former year's wood, below the place where the laſt year's ſhoot is produced from; for at this joint the roots will ſpring out and form the plant. In ſhortening theſe cuttings, obſerve to cut them in lengths of three, four, or five eyes, according to their diſtance from each other: the cuttings thus ready (which may be taken from the parent plant any time between November and February) ſhould be laid with their lower part in the ground, and covered in hard weather with litter, where they may remain till the ſeaſon of planting arrives, which is the beginning of April; they ſhould then be taken up cleanſed and planted, where they are intended to remain, and perfect themſelves, as they are not to be removed again, whether for walls or vineyard. The ſoil for grape Vines requires ſome conſideration; if the ground is of a wet nature or a ſtrong ſtiff clay, it is the moſt improper for theſe plants, as the cuttings or layers will grow very luxuriant, but will produce very ill flavoured grapes, owing to the redundancy of moiſture

moiſture with which the plants are ſaturated; a rich light ſoil is therefore to be preferred; for notwithſtanding the notion of many gardeners, in putting a ſtratum of ſtones, brick, rubbiſh, &c. to impoveriſh the ſoil with a view to render the Vines more prolific, it only ſtunts the growth of the plants, and cauſes the fruit to be ſmall and trifling, whereas, if they have a rich ſoil the ſhoots will grow ſtrong, eſpecially where they can have extent to run, and the bunches will be proportionally large and handſome. The ſoil being ready for the reception of the cuttings, let them be planted againſt the wall, at about ſix inches aſunder, and at ſuch a depth as but one eye of the cutting may appear above ground, obſerving to preſs the ground tight about them, and if the ſeaſon proves dry let them occaſionally have a little water; but where there is the conveniency of a ſtove in February the cuttings may be planted each in a ſmall pot, and plunged in the bark-bed; here they will quickly take root, and in the courſe of the ſummer make a very great progreſs, ſo much as to gain a year of thoſe planted in the common ground, obſerving, as the pots are filled with roots, to ſhift the plants into others of a ſize larger, and thus ſhould be occaſionally repeated when neceſſary; the plants thus forwarded ſhould in autumn be inured to the open air, and turned out of the pots with their balls into the places where they are intended to remain. With reſpect to the aſpect theſe plants require, let it be remembered, that all aſpects are improper for grape Vines, excepting the ſouth and ſouth-weſt, as in other ſituations ſcarcely any bunches will ripen in this cloudy changeable climate.

*Firſt Year's Management of Cuttings.*

When the cuttings begin to ſhoot let them be examined, and leave only two, if ſo many ariſe, thoſe which appear the ſtrongeſt ſhould be choſen; about a month after, the ſhoots will have made ſome progreſs ſo as to ſhew which is likely to be the ſtrongeſt; this ſhoot ſhould be preſerved, carefully nailing it againſt the wall, to prevent its being broke by the wind, obſerving to rub off the other; in the courſe of the ſummer, as the ſhoot advances, continue to keep it nailed up, and let all lateral ſhoots be ſtripped off as they are produced; this, with keeping the ground clear from weeds, and occaſionally watering in dry weather, is all that the plants require in their ſummer's management: when the leaves turn yellow and begin to drop, the ſhoot which has been reſerved ſhould be topped down to two eyes; theſe will produce ſhoots the ſucceeding ſummer.

*Second Year's Management.*

The ſpring following the borders may be enriched and dug up ſo as not to diſturb the roots of the Vines: in April and May the ſhoots from the eyes which were left will be of a conſiderable length, each ſhould be tacked to the wall to prevent their being broke by the winds, rubbing off all lateral ſhoots as they are produced, and this work ſhould be repeated occaſionally, till the ſhoots have done growing, obſerving to keep the ground entirely free from weeds during the ſummer. The November following, the operation of pruning ſhould be performed by ſhortening the weakeſt of the ſhoots to two eyes, and letting the ſtrongeſt be left to four, ſix or eight eyes according to its ſtrength; for if the principal ſhoot is very ſtrong, the greater length ſhould it be cut to, and the more probability there is of its producing fruit the ſucceeding ſummer.

*General future Management.*

The ſame care will be required the third year, &c. for in April or May, according to the forwardneſs of the ſeaſon, the ſhoots of the Vines will have made ſome progreſs, which ſhould be properly attended to, this is by diſplacing all unneceſſary ſhoots, leaving none but thoſe which have the appearance of producing bunches, or furniſhing ſhoots for the ſucceeding year; theſe ſhould be laid cloſe to the wall in a regular manner; for, if neglected, the firſt violent wind may break them off, and if not, the ſhoots will ſoon run into confuſion; the omiſſion of this neceſſary work will alſo be attended with other bad conſequences, for the growth of the bunches will be retarded, and the ſhoots, intended for the ſupply of the next year, will be ſo much ſhadowed and ſtopped in their growth as to prevent the wood from obtaining its proper ripeneſs, ſo as to be able to furniſh good bunches in future. The ſame attention ſhould be paid the Vines in the following months, obſerving to keep them nailed up as they advance, diſplacing all uſeleſs, ſtraggling,

ſtraggling, and lateral ſhoots. As they are produced in Auguſt, the extremities of the fruit-bearing branches may be ſhortened, as alſo thoſe which have run out of bounds to a very great length; this ſtopping the ſhoots will aſſiſt the bunches to ſwell their berries out, and forward their ripening; and if that or the former month proves very dry and hot, let them be moderately watered: this will keep the Vine in a ductile ſtate, and be a great addition towards increaſing the ſize of the bunches; but when the fruit is full grown, watering ſhould be diſuſed as it would debaſe the flavour of the berries. When the grapes are approaching to ripeneſs they ſhould be guarded from the ravages of birds, waſps, and other inſects: they may be protected from birds, by placing a net over the Vine; but this prevents not the waſps, &c. from preying on the fruit, therefore, to hinder theſe inſects from making their depredations, provide ſome fine crape, which being cut to a proper ſize, bags may be made ſo as to fit the principal hunches: black crape is beſt, as it is of a colour which abſorbs the rays of light, and aſſiſts by its warmth the ripening of the bunches. But as our climate will not ſufficiently ripen the finer ſorts of grapes, I ſhall conciſely mention the method of obtaining them in perfection.

*Forcing Grape Vines.*

Various buildings have been contrived to effect the ripening of thoſe kinds of grapes, which cannot be effected in the open ground, as likewiſe for the earlier ſorts to be fit for the table in May, June, or July. The conſtruction of theſe kinds of buildings are different, though all anſwering the ſame purpoſe: ſome are conſtructed with flues ranging within the wall where the Vines are trained up; but as the Vines would receive more heat at times by being cloſe to the wall than is proper, a lattice work is generally detached therefrom, to which the branches are trained, and the whole is covered with a range of ſloping glaſs; but the more common method is to train them under the ſloping glaſſes of the pine-apple ſtove, the Vines are generally planted cloſe on the outſide, and trained in through holes contrived for the purpoſe; in ſuch places there is a certainty of the grapes ripening in perfection, obſerving always to train freſh ſhoots from without every year that there may be no want in the choice of wood; their management differs but little from thoſe of the common walls, therefore needs no repetition.

The other ſpecies of Vines are thoſe which more excite curioſity than are of real uſe.

[2] VITIS *Labruſca.*

*Virginian Grape.*] Hath a climbing ſtalk furniſhed with large, trilobate, heart-ſhaped leaves, downy on their underſide and indented on their edges; the flowers are produced in bunches, and are ſucceeded by round rough-flavoured black fruit.

[3] VITIS *Vulpina.*

*Fox Grape.*] The leaves are large and ſmooth on both ſides, of a heart-ſhaped figure with idented edges; the flowers grow in bunches, and are ſucceeded by black berries of a very diſagreeable ſtinking flavour.

[4] VITIS *Caciniatis.*

*Parſley-leaved Grape.*] The leaves of this ſort are finely divided, the ſtem is thick, bearing ſtrong ſhoots, but the fruit is of no account.

[5] VITIS *Arborea.*

*Pepper-tree Grape.*] The ſhoots of this ſort are rather weak, but admired for the beauty of its leaves, which are ſupradecompound, of a fine green colour, are compoſed of a multitude of delicate folioles; the flowers come out in bunches from the wings of the ſtalks, and are ſucceeded by berries of the ſize and form of pepper.

All theſe ſpecies are propagated by cuttings, layers, or ſuckers.

# W.

WALTHERIA. *Waltheria.*

The plants are woody exotics, from the warm parts of America and India, and retained here in ſtoves for variety; riſing with woody ſtems, from two or three to four or five feet high, adorned with oval and ſpear-ſhaped leaves, and bunches of pentapetalous flowers.

Claſs and order, *Monadelphia Pentandria.*

*Characters.*] CALIX, is monophyllous, cyathiform or cup-ſhaped, five-parted, and permanent.——COROLLA, five heart-ſhaped, ſpreading petals.——STAMINA, five ſhort, monadelphous filaments, having diſtinct antheræ.—PISTILLUM, an oval germen, ſlender ſtyle, and pencilled ſtigma.—PERICARPIUM, an oboval, bivalved, unilocular capſule, and one obtuſe ſeed.

The ſpecies are,

[1] WALTHERIA *Americana.*

*American Waltheria.*] Riſes with a ligneous ſoft ſtalk, branching ſparingly two or three feet high; large, oval, plicated, ſawed, indented leaves; and from the upper parts of the branches round heads, or bunches of yellow flowers, on proper peduncles.

[2] WALTHERIA *Indica.*

*Indian Waltheria.*] Riſes with a woody ſtem, dividing and branching eight or ten feet high; having ſoft, woolly branches; large, oval, ſerrated, plaited leaves; and ſmalliſh yellow flowers, in round bunches, ſitting cloſe, without peduncles or foot-ſtalks.

[3] WALTHERIA *Anguſtifolia.*

*Narrow-leaved American Waltheria.*] Riſes with ligneous ſtalks, dividing and branching ſix or ſeven feet high; ſpear-ſhaped ſawed leaves; and round bunches of yellow flowers, on proper peduncles.

They all flower in ſummer, continuing in ſucceſſion ſeveral months; ſucceeded by ripe ſeeds in autumn.

All the three ſorts are ſomewhat ſhrubby; durable in ſtem and branches, at leaſt for ſeveral years; though, as they are generally raiſed from ſeed, they arrive to perfection in two years, ſo as to flower and produce ſeeds; and ſometimes continue ſeveral years, and flower annually in ſummer.

As they are tender exotics from hot countries, they muſt always be kept in a ſtove here.

They are propagated by ſeed, ſowed in a hot-bed; and when the plants are fit to remove, plant them ſeparately in pots, and plunge them in the bark-bed; and managed as other woody plants of the ſtove collection.

WINTERANIA. *Winterania.*

It is of the tree kind; a native of South America; requiring the indulgence of a ſtove in this country, where it is cultivated for variety; having oblong leaves and pentapetalous flowers.

Claſs and order, *Dodecandria Monogynia.*

*Characters.*] CALIX is bell-ſhaped, trilobed, with the lobes roundiſh and concave.—COROLLA, five oblong, ſeſſile petals, longer than the calix; and a conical, pitcher-ſhaped NECTARIUM.——STAMINA, no filaments; but twelve or ſixteen linear diſtant antheræ, affixed to the outſide of the nectarium.—PISTILLUM, an oval germen; cylindric ſtyle, with three obtuſe ſtigmas.——PERICARPIUM, a roundiſh, trilocular berry, with two heart-ſhaped ſeeds.

There is but one ſpecies, which is wholly a fine aromatic.

WINTERANIA. *Canella.*] Riſes with a thick, woody ſtem, branching on every ſide, almoſt the whole length, growing near twenty feet high; having a lightiſh-coloured aromatic bark; oblong, obtuſe, light-green leaves; and red flowers, in umbellate cluſters, at the ends of the branches, ſucceeded by roundiſh berries.



This

This tree, being a native of the hot parts of America, muſt always be kept in a ſtove in this country, and plunged moſtly in the bark-bed.

It is propagated by ſeeds, and cuttings in pots, and plunged in the bark-bed; alſo by layers; though the ſeeds are generally the moſt certain method of raiſing them; which are procured from America by the ſeedſmen, for the cuttings and layers root but reluctantly.

# X.

XERANTHEMUM. Eternal flower.

This genus furniſhes herbaceous annuals, and ſhrubby perennials for the pleaſure-ground and green-houſe collection; riſing with upright, branchy ſtems, from two or three, or four feet high; and ſome of procumbent growth, garniſhed with ſpear-ſhaped, and oblong, roundiſh, and oval leaves in the different plants; and compound flowers.

Claſs and order, *Syngeneſia Polygamia, Superflua.*

*Characters.*] CALIX, a compound flower, having the general calix compoſed of many long ſpear-ſhaped ſcales.—COROLLA, compoſed of many hermaphrodite florets in the diſc, each conſiſting of one funnel-ſhaped petal, five parted at top; and tubular female florets in the radius, more ſlightly cut at the brim.—STAMINA, five very ſhort filaments, and long cylindric antheræ.—PISTILLUM, a ſhort germen; filiform ſtyle, having a bifid ſtigma in the hermaphrodites; and in the females two reflexed ſtigmas.—PERICARPIUM, none; each floret ſucceeded by an oblong, coronated ſeed, placed on the receptacle.

The plants of this genus derive the name Eternal Flower, from the great durability of the flowers, which being gathered when fully blown, will retain their beauty many months. There are many ſpecies, but the moſt remarkable of which are the following, conſiſting of a hardy herbaceous annual, and ſome tender ſhrubby plants.

*Hardy Annual Kind.*

Compriſes the common Eternal Flower, furniſhed with ſeveral varieties, all hardy annuals.

XERANTHEMUM *Annuum.*

*Annual Xeranthemum, or Common Eternal Flower.*] Riſes with an herbaceous, angular, downy, branching ſtalk, two or three feet high; ſpear-ſhaped, ſpreading, hoary, cloſe-ſitting leaves; and all the ſtalks and branches, terminated by large flowers ſingly, of different colours in the varieties, appearing in July, Auguſt, and September, and are very ornamental, ſucceeded by ripe ſeeds in autumn.

*Varieties are.*] Large white-flowered.—Purple-flowered.—Double white-flowered.—Double purple flowered.—Double violet coloured.

The flowers of all theſe varieties are of the compound kind; conſiſting of many ſmall florets in one common calix, together forming one large flower, which in all the ſorts is very ornamental, and in high eſtimation for the ſingularity of their durable beauty, even after being gathered; for if gathered when fully blown in dry weather, with part of the ſtalk to each, and hung up to dry in a ſhady place, they will retain their reſpective colours in full beauty all winter, and by placing the ſtalks in glaſſes or pots, not with water, but ſand to make them ſtick faſt, and placed in any apartment of a houſe, they will appear very ornamental.

They are all eaſily propagated by ſeeds ſowed in the full ground, in autumn or ſpring, or in both ſeaſons; as the autumn raiſed plants will flower earlier and ſtrongeſt, and the ſpring plants will ſucceed them, and thereby continue the ſucceſſion of flowers proportionably longer.

Sow them for tranſplantation in any bed or border of good light earth, either on the ſurface and raked in, or in drills half an inch

inch deep, and five or ſix inches aſunder; and when the plants are come up two or three inches high, thin out a quantity of the ſtrongeſt, and prick them either in beds in rows a foot aſunder finally to remain; or in patches about the different borders to flower in aſſemblage with other hardy annuals; giving water as ſoon as planted, and repeated occaſionally in dry weather till they have taken good root, and they will require no farther care except keeping them clean from weeds.

Or the ſeeds may be ſowed in patches in the different borders, in the places where you intend the plants ſhall flower.

# Y.

## YUCCA.

Adam's Needle.

This genus conſiſts of ſhrubby ſucculent evergreens of America, both hardy and tender kinds, to diverſify the pleaſure-ground and green-houſe collections, riſing with upright, thick, woody ſtems ſeveral feet high, adorned at top with cluſters of very long, aloe-like, ſtiff leaves, ending in long ſharp ſpines; and at top, from among the leaves, long ſpikes of bell-ſhaped, ſix-parted, liliaceous flowers.

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX, none.—COROLLA, is monopetalous, bell-ſhaped, and divided into ſix large oval ſegments.—STAMINA, ſix very ſhort reflexed filaments, having ſmall antheræ.—PISTILLUM, an oval three-cornered germen longer than the ſtamina, no ſtyle, but an obtuſe three-furrowed ſtigma.—PERICARPIUM, an oblong, triangular, trifid, trivalved capſule of three cells, containing many ſeeds lying over one another in a double ſeries.

There are four ſpecies of Yucca, all of which are of ſingular growth; they riſing with erect ſtems from two or three to ſix or eight feet high, terminated by a large tuft of very long leaves, reſembling thoſe of the aloe, but much narrower; have all durable ſtems and evergreen leaves; are natives of different parts of America, and two of them are moderately hardy to grow here in the full ground; and the other two being more tender, require ſhelter of a green-houſe in winter.

*Hardier Kinds.*

[1] YUCCA *Glorioſa.*

*Glorioſus Yucca, or Common Adam's Needle.*] Riſes with an erect, ligneous, thick ſtem, two or three feet high, having very long, narrow, ſtiff, entire leaves, ending in a long ſharp, black-ſpine, garniſhing the ſtem almoſt to the bottom and in a large tuft at top; and from the center of the top leaves riſes a long branching peduncle, ſuſtaining a panicle of bell-ſhaped white and purple flowers.

[2] YUCCA *Filamentoſa.*

*Filamentoſe or Thready Virginia Yucca.*] Riſes with an upright, thick, ligneous ſtem two or three feet high, adorned at top with a tuft of very long, ſpear-ſhaped, ſtiff, blunt-pointed, ſawed filamentoſe leaves, emitting long threads from the ſides, hanging downward; and from the top of the ſtem amidſt the leaves an erect peduncle or flower-ſtalk, ſeveral feet high, garniſhed with many large, white, and purple-ſtriped leaves.

Both theſe ſpecies flower in Auguſt and September, and make an ornamental appearance, but are not ſucceded by ſeeds in England.

They are natives of North America, the former that of Canada, and the latter of Virginia, and are both tolerably hardy; ſo as after having little occaſional ſhelter whilſt young, for two or three winters, they may be turned out into the open ground in a ſheltered ſituation in the ſhrubbery; though it is alſo proper to keep ſome always in pots, and treated as green-houſe plants, as a reſerve in caſe thoſe in the open ground ſhould be cut off in very ſevere winters.

*Tender Kinds for the Green-houſe.*

[3] YUCCA *Aloifolia.*

*Aloe-leaved Yucca.*] Riſes with an erect, thick, fleſhy ſtem, eight or ten feet high,

crowned with a large tuft of long narrow, ſtiff, crenated, aloe-like leaves ending in ſharp ſpines; and from the center of the crown of leaves come out the flower-ſtalk, branching pyramidally two or three feet high, having all the branches terminating in a ſpike of flowers, purple without and white within, appearing in Auguſt and September.

4 YUCCA *Draconis.*

*Dragon Tree-leaved Yucca.*] Riſes with an upright, thick, brown ſtem, three feet high, crowned with long, narrow, ſerrated leaves ending in ſpines and nod downward; and in the center of the leaves ariſe, the flower-ſtalk very branchy, with all the branches terminating in ſpikes of fleſh-coloured flowers in Auguſt and September.

All theſe four ſpecies of *Yucca*, being of ſingularly curious growth; they are worthy of culture in every good collection, keeping ſome of all the ſorts in pots, to move to ſhelter of a green-houſe in winter; as they will afford a conſpicuous and entertaining variety in this collection; and ſome plants of the two firſt ſorts may alſo, after attaining a little ſtrength and gradually hardened, be planted out in the full ground in ſome dry warm ſituation, ſheltered by adjacent ſhrubs and trees.

As all the ſorts are of a ſucculent nature, they ſhould always be planted in a light dry ſoil; if ſomewhat ſandy the better.

The propagation of all the ſorts is by off-ſets and ſuckers, from the root and head of the plants; alſo by ſeed.

By off-ſets, &c.—Theſe may be detached almoſt any time, in ſpring and ſummer, and lay them in ſome dry place for a few days, till the wounded part made by ſeparation from the plant is dried and healed over, then plant them in pots of light ſandy compoſt, and place them in a ſhady place till they have taken root.

By Seed.—This is obtained from abroad, and ſhould be ſowed in the ſpring in pots of light earth, and plunged in a hot-bed; in which the plants will ſoon come up, and when they are two or three inches high, prick them ſeparately in ſmall pots of light ſandy mould, plunging them alſo in a hot-bed to forward their growth, aſſiſting them with moderate waterings and freſh air daily; and harden them by degrees to the full air in June and July, to remain till October, then removed into the green-houſe.

# Z.

ZANTHOXYLUM. The Tooth-ach Tree.

This plant is a woody hardy exotic, growing naturally in North America, riſing to the height of twelve or fourteen feet, furniſhed with large pinnate leaves and dioecious flowers, growing in ſpikes.

Claſs and order, *Dioecia Pentandria.*

*Characters.*] *Male flower.*—CALIX, a perianthium deeply cut into five oval coloured parts.—COROLLA, none.—STAMINA, five awl-ſhaped erect filaments, with didymous, ſulcated, roundiſh antheræ.—*Female flower*, CALIX, as the male, COROLLA, none.—PISTILLUM, a roundiſh germen, an awl-ſhaped ſtyle, with an obtuſe ſtigma.—PERICARPIUM, an oblong capſule, formed of two valves and one cell, containing a ſingle ſmooth roundiſh ſeed.

The name of Tooth-ach Tree being applied to this plant, ariſes from the uſe made of the bark in cleanſing the teeth, and preventing that troubleſome diſorder among the inhabitants of Canada.

This ſpecies is called

ZANTOXYLUM *Clava Herculis.*

*Canada Tooth-ach Tree, or Hercules's Club.*] It grows to the height of twelve feet, with a rough bark armed with ſhort ſpines; the leaves are winged, of a dark green colour, growing irregularly on the branches, each conſiſt of four or five pair of ſpear-ſhaped folioles, which are terminated by an odd one; the flowers come out from the ends of the branches

branches in looſe panicles; they being apetalous have no great appearance, and are ſucceeded by unilocular capſules, containing the ſeeds.

*Variety.*] The aſh-leaved Tooth-ach Tree, with oval, oblong, folioles, and prickly midribs.

This tree is propagated by ſeeds and layers, or cuttings ſtruck in a moderate hot-bed, and afterwards inured to the open air.

ZINNIA.

A genus of annual plants, cultivated for ornamenting the pleaſure and flower-gardens, growing with erect ſtalks, garniſhed with oblong leaves, and producing radiated flowers.

Claſs and order, *Syngeneſia Polygamia Superflua.*

*Characters.*] CALIX, the general cup is oval, cylindric, and imbricated, with many blunt, upright, perſiſtent ſcales.—COROLLA, compound and radiated, conſiſting of hermaphrodite florets, placed in the diſc, and female ones, which are ligulated, and form the rays.—STAMINA, of the hermaphrodites are five ſhort filaments, with cylindric tubuloſe antheræ.—PISTILLUM, an oblong ariſtated germen, with a ſlender ſemibifid ſtyle, and two erect obtuſe ſtigmas; in the female flowers the germen is oblong and triquetrous, with a capillary ſtyle, and two recurved ſtigmas.—PERICARPIUM, the calix containing oblong ſolitary ſeeds crowned with down, and placed on a paleaceous receptacle.

Of this genus there are two ſpecies.

[1]ZINNIA *Pauciflora.*

*Yellow Zinnia.*] The root of this plant is fibrous, from which ariſes the ſtalk to about three feet high; it is woody below, and branches upwards, which are placed oppoſite; theſe are furniſhed with oblong leaves of a pleaſing green colour, the flowers terminate the ends of the branches on long foot ſtalks; they are of a yellow colour, which decays till the ſeeds are ripe.

[2]ZINNIA *Multiflora.*

*Red Zinnia.*] This plant is alſo annual; the ſtalk riſes erect with upright branches, theſe are channelled and hairy; the leaves are oval, lanceolate, and placed oppoſite; the flowers come out at the extreme part of the branches, the florets of the diſc are yellow, and thoſe which form the rays are of a duſky red; theſe continue till the ſeed is ripe, which is in autumn.

Theſe plants being annual are propagated from the ſeeds which ſhould be ſown on a ſlight hot-bed; in March, and afterwards, when the plants ariſing are a few inches high, they ſhould be pricked out on another bed previouſly prepared to receive them; here they may remain till the advance of ſummer, when they may be taken up and tranſplanted in the borders of the pleaſure or flower garden, where they will blow and complete their ſeeds for the next year.

ZYGOPHYLLUM.

Bean Caper.

It furniſhes herbaceous and woody ſucculent exotics of Aſia and Africa, cultivated here for variety in the pleaſure ground and green-houſe collections: riſing with erect ſtalks three or four feet high, adorned with oval, oblong, and ſpear-ſhaped, fleſhy, ſucculent leaves, and pentapetalous flowers along the ſides of the branches.

Claſs and order, *Decandria Monogynia.*

*Characters.*] CALIX, five oval, obtuſe, concave, erect leaves.—COROLLA, five obtuſe petals emarginated at top, and a ten-leaved cloſed nectarium, which includes the germen.—STAMINA, ten awl-ſhaped filaments and oblong incumbent antheræ.—PISTILLUM, an oblong, germen, awl-ſhaped ſtyle, crowned by a ſimple ſtigma.—PERICARPIUM, an oval, pentagonous, quinquevalvulous capſule of five cells, having many roundiſh ſeeds.

There are ſeveral ſpecies, one is herbaceous and moderately hardy, with perennial roots and herbaceous annual ſtalks; the others are of a woody durable growth, and tender, requiring ſhelter of the green houſe in the winter. The principal ſorts in the Engliſh gardens, are the following.

[1]ZYGOPHYLLUM *Fabago.*

*Fabago or Common Bean Caper.*] Hath a thick, fleſhy, deeply ſtriking, perennial root; upright, round, ſmooth, jointed, herbaceous, green ſtalks, three or four feet high; garniſhed with oval, ſmooth, fleſhy, blueiſh-green leaves two or three together on each petiole; and reddiſh flowers, by two or three together at the axillas of the ſtalks, appearing in July, ſucceeded by long capſules, containing the ſeed, ripening in autumn.

It is durable in root, but the ſtalks, being herbaceous, periſh every autumn; is tolerably hardy, only requiring a little ſhelter in winter when young, afterwards may be planted in the full ground in the borders in any dry light ſoil, there finally to remain; where they will abide many years by the root, and ſend up ſtalks and flower abundantly, and ripen ſeeds.

As it is of a ſucculent nature, it ſhould have a dry rubbiſhy ſoil.

It is propagated by ſeeds ſowed in the ſpring; ſome in a hot-bed to bring them forward, and ſome on a warm border; and when the plants are come up about two inches high, plant ſome out in ſmall pots ſeparately, and plunged into a hot-bed to facilitate their rooting, and forward their growth; but harden them by degrees to the full air; others may be planted in a warm border to take their chance, allowing thoſe in the pots ſhelter of a garden-frame in froſty weather, and in ſpring ſome of them may be turned out into the full ground where they are to remain.

*Tender Green-houſe Kinds.*

Theſe are moſtly of a ſhrubby nature, durable in root, ſtem, and branches, garniſhed with ſucculent leaves.

[2]ZYGOPHYLLUM *Seſſilifolium.*

*Seſſile-leaved African Bean Caper.*] Riſes with an upright woody ſtem, branching numerous and irregularly, three or four feet high; oval, ſpear-ſhaped, thick, ſmooth, ſucculent ſeſſile leaves, ſurrounding the branches by fours; and yellow flowers on long, ſlender footſtalks at the ſides of the branches, in ſucceſſion great part of ſummer.

*Varieties.*] Yellow flowered—Sulphur-coloured flowers—White-flowered—Copper-coloured, having moſtly a reddiſh or brown ſpot near the baſe of each petal.

[3]ZYGOPHILLUM *Morgſana.*

*Morgſana, or Purſlane-leaved Æthiopian Bean Caper.*] Riſes with a ſhrubby ſtem, dividing and branching irregularly, three or four feet high; oval, thick, obtuſe ſucculent leaves, ſurrounding the branches by fours; and ſulphur-coloured flowers on long foot-ſtalks from the ſides of the branches, appearing moſt part of ſummer.

Both theſe tender ſpecies being natives of the warm parts of Africa; they require ſhelter of a green-houſe in this country in winter, planting them in pots of light ſandy earth, as being ſucculent, and manage them as other plants of ſimilar quality. See GREEN HOUSE PLANTS.

They are propagated eaſily by cuttings and by ſeed.

By Cuttings.—Theſe may be planted any time in the ſpring or ſummer; if in ſpring about March or April, plant them in pots, and if plunged in a hot-bed, and frequently watered, they will quickly emit roots, and ſhoot at top; and if in the ſummer months, plant them in a ſhady place, or in pots placed in the ſhade, giving frequent waterings, they will alſo take good root; and in either method pot them off ſeparately towards autumn in order to be moved into the green-houſe or glaſs-caſe, in October.

By Seed.—The plants ſometimes produce ſeeds in this country, or are procured from abroad by the ſeedſmen; ſow them in ſpring in pots of light earth, and plunge them in a hot-bed, where they will ſoon come up, and when a little advanced in growth, prick them in ſeparate ſmall pots, watered and plunged again in the hot-bed till well rooted, then hardened gradually to the full air in June and July, to remain till October, then placed in the green-houſe, &c.

ADDENDA.

# ADDENDA.

A.

AGARIC. Muſhroom. See the article SPAWN.

ALSTROEMERIA.

Conſiſts of ſtove plants, which are perennial and herbaceous, bearing very ornamental hexandrious flowers.

Claſs and order, *Hexandria Monogynia.*

*Characters.*] CALIX, none.—COROLLA, hexapetalous and ſublabiated, the three outward petals are wedge-ſhaped and retuſe, the interior petals are ſpear-ſhaped, the two lower ones of which are tubuloſe at the baſe. STAMINA, ſix ſubulate, declining, unequal filaments, with oblong antheræ.—PISTILLUM, a top-ſhaped, ſix-angled germen, which is placed below the flower; the ſtyle is declining and ſlender, topped with three oblong bifid ſtigmas.—PERICARPIUM, a roundiſh ſixangular mucronated capſule, opening with three valves, containing three cells, filled with many globoſe ſeeds: there are three ſpecies of this genus.

[1]ALSTROEMERIA *Pelagias.*

*Peruvian ſpotted purpliſh Alſtroemeria.*] Hath a fibrous root, from which ariſe many herbaceous ſtalks, about three feet high; on theſe the leaves are pretty thick ſet, and continue all the winter, each of which are oval, ſpear-ſhaped, reflexed, and of a dark-green colour, from the extremities of the branches, the flowers come out, two or three together, on long foot-ſtalks, they are compoſed of ſix petals; the outer ones are white, with a large, reddiſh purple ſpot in the middle of each; the interior petals are ſpotted with purple; they are ſucceeded by a hexangular capſule, containing many ſeeds.

[2]ALSTROEMERIA *Ligta.*

*Striped Alſtroemeria.*] Hath a riſing ſtalk, with ſpear-ſhaped leaves, and ſtriped purple flowers

[3]ALSTROEMERIA *Salſilla.*

*Climbing Alſtroemeria.*] Hath a twining ſtalk, with ſpear-ſhaped leaves placed alternately; the flowers come out from the ſides of the ſtalks, and are of a purple colour.

Theſe plants are retained in the ſtove, though they will thrive in the green-houſe; their beautiful flowers come out in May, and frequently blow all the ſummer months; they are propagated by cuttings ſeeds or parting their roots, which may be done any time in the ſpring, giving them the aſſiſtance of a hot-bed.

AMETHYSTEA.

We know but of one ſpecies of this genus; it is a native of Siberia, and an hardy annual.

Claſs and order, *Diandria Monogynia.*

*Characters.*] CALIX, is monophyllous, tubulately companulated, and five-parted at the margin.—COROLLA, monopetalous and ringent.—STAMINA, two ſlender filaments, and ſimple antheræ.—PISTILLUM, quadrifid germen, with a ſingle ſtyle topped with two acute ſtigmas.—PERICARPIUM, none; the cup containing four obtuſe ſeeds.

This plant riſes with an upright ſtalk to the height of about a foot, with a few lateral branches towards the top, on the extremities of which the flowers are produced in ſmall umbels of a rich blue colour, which make an elegant appearance; the leaves are trifid, ſerrated, and of a dark green; the flowers come out in June or July, and when the ſeeds are ripe, may be immediately ſown, where the plants are to remain, as they will not thrive well by tranſplanting.

AMYGDALUS PERSICA.—Add after *Early Newington Peach,*

*Galland Peach.*] A middle-ſized round fruit, of a very deep red all over, eſteemed the fineſt flavoured Peach of any yet known; ripe the beginning of Auguſt.

ANNUAL PLANTS. Such as are only of one year's duration, riſing from ſeed in the ſpring, &c. arrive to full growth the enſuing ſummer, and produce flowers and ſeed; then totally periſh, root and top, in autumn or winter following.

Plants of the Annual Tribe are very numerous, principally all of the herbaceous kind; conſiſting both of eſculents, and of the flowry race, as ornamental plants, which latter are commonly called ſimply *Annuals*, and of which there are both hardy and tender kinds; the hardy Annuals being ſuch as will grow from ſeed in the open ground; and the tender Annuals are ſuch as require to be raiſed and forwarded in a hot-bed, as is explained in the culture of the reſpective ſorts in their reſpective genera.

C.

CALICARPA,—*add,*

*Characters* ] CALIX, monophyllous and bell-ſhaped.—COROLLA, monopetalous and tubuloſe, with the brim cut into four obtuſe ſpreading parts.—STAMINA, four ſlender filaments double the length of the corolla, with oval antheræ.—PISTILLUM, a roundiſh germen, the ſtyle ſlender, with a blunt ſtigma. PERICARPIUM, a ſmooth round berry, containing four oblong ſeeds.

*After* cuttings, *ibid. add,*

but ſhould be ſheltered from the ſeverity of hard weather, particularly when young.

CHIRONIA, ſhrubby African Centaury.

This genus conſiſts of two ſpecies of ſhrubs, which are natives of Africa, and require ſome ſhelter in winter.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX, monophyllous, divided into five parts.—COROLLA, monopetalous, tubular, with the border cut into five ſpreading parts.—STAMINA, five broad filaments, growing to the top of the tube, and topped with oblong antheræ.—PISTILLUM. an oval germen, ſlender ſtyle, and a capitated ſtigma.——PERICARPIUM, oval and biocular; the ſeeds are numerous and ſmall.

The ſpecies are,

1 CHIRONIA *baccifera.*

*Shrubby berry-bearing African Centaury.*] Chironia with round-jointed ſtalks, divided into various branches upward, and furniſhed with ſhort, narrow, fleſhy leaves; the flowers are of a fine red colour, and produced at the extremities of the branches; they continue in ſucceſſion all the ſummer and autumn months, and ſometimes in favourable ſeaſons produce ſeeds.

2 CHIRONIA *fruteſcens.*

*Shrubby African Centaury with capſules.*] Chironia with a round ſtalk, producing ſeveral erect branches, and growing to the height of between two and three feet; at the ends of each ſhoot, the flowers which are tubulous and ſpreading are produced; they are of a bright ſcarlet colour, and make a gay appearance; they are in bloom all the ſummer, and the ſeeds ripen in autumn.

*Propagation.*

Both ſorts are raiſed from ſeeds on a hot-bed in the ſpring, and, when arrived at ſome tolerable ſize, may be inured to the open air in ſummer, but require ſhelter in an airy glaſs-caſe in winter, and muſt have but little water; the ſoil they beſt thrive in is a light ſandy earth: they may alſo be propagated by cuttings.

CHRYSOBALANUS, Cocoa Plum-tree.

A genus of trees growing in ſeveral parts of the Weſt Indies.

Claſs and order, *Icoſandria Monogynia.*

*Characters.*] CALIX, monophyllous and bell-ſhaped.—COROLLA, conſiſts of five oblong, ſpreading petals, inſerted in the calix. —STAMINA, many filaments inſerted in the calix, and ſmall twin antheræ.—PISTILLUM, an oval germen, with a ſtyle of the ſhape and length of the ſtamina, with a blunt ſtigma. —PERICARPIUM, a large oval berry of one cell, containing a rough oval nut.

The ſpecies are,

1 CHRYSOBALANUS, *Icaco.*

*Cocoa Plum-tree.*] Chryſobalanus with a ſhrubby ſtalk riſing about eight or ten feet high, from which iſſues ſeveral branches, which are furniſhed with ſtiff, oval, indented leaves from the wings of theſe, and at the ſeparation of the branches, the flowers come out in looſe bunches; they are ſmall and of a white colour; theſe are ſucceeded by berries which are of different colours, and of the ſize of a middling plum.

2 CHRYSOBALANUS *Purpurea.*

*Chryſobalanus with decompounded leaves.*] This ſpecies hath a ſhrubby ſtalk like the former, but differs in the foliage, being winged and branched, each branch conſiſting of ſix or ſeven pair of oval entire folioles.

*Propagation.*

Theſe trees are propagated by the nuts, which muſt be procured from the Weſt Indies; they muſt be ſown in the ſpring on a hot-bed, and when the plants have riſen high enough; they may be tranſplanted ſingly into pots, and plunged into the bark-bed in the ſtove, obſerving to ſhade them from the ſun till they have taken freſh root, in which place they muſt always be continued.

CHRYSOPHILLUM, Star-apple-tree.

It grows naturally in the Weſt Indies, where it is cultivated for its fruit, which is aſtringent and rough to the palate, unleſs mellowed by keeping, when it becomes very agreeable to the palate.

Claſs

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX, a ſmall cup divided into five parts.——COROLLA, monopetalous and bell-ſhaped, with the border cut into five parts.—STAMINA, five ſubulate filaments, placed in the tube of the corolla, and topped with double roundiſh antheræ.—PISTILLUM, a roundiſh germen, with a very ſhort ſtyle and blunt ſtigma.—PERICARPIUM, a large round berry, containing ten cells, in four or five of which are depoſited a compreſſed hard ſeed.

The ſpecies are,

[1]CHRYSOPHYLLUM, *Cainito.*

*Gold-coloured leaved Star-apple-tree.*] This ſpecies in its native country riſes to thirty or forty feet in height, furniſhed with many ſlender declining branches, on which grow oval ſtriated leaves, whoſe under ſide is downy, and of a gold colour; the flowers are produced in oblong bunches from the extremity of the branches, and are ſucceeded by a large berry.

[2]CHRYSOPHYLLUM, *Glabrum.*

*Mexican Medlar, or Sappatilla.*] The difference between this and the other ſpecies is, that it grows not near ſo large, the under part of the leaves are quite ſmooth, and the fruit is oval, about the ſize of a damſon; both ſpecies retain their leaves all the year.

*Propagation.*

The propagation of theſe trees are by ſeeds from their native country, which muſt be ſown in pots and plunged in a hot-bed, and when the plants have ariſen to three or four inches high, they ſhould be planted ſingly into ſmall pots, and replunged into the bark-bed, care being taken to ſhade and water them till they have got a freſh root, which they will ſoon do; after this they ſhould have a proper ſhare of air and water, according to the weather, and on the approach of winter, admitted into the ſtove, where they ſhould be treated as others of the like nature are.

COCCOLOBA, Sea-ſide Grape.

This genus of plants grow on the ſea ſhores in divers parts of the Weſt Indies, and are here admired for the largeneſs and ſhape of their leaves which are evergreen and very ornamental in the ſtove with other curious plants.

Claſs and order, *Octandria Trygynia.*

*Characters.*] CALIX, a monophyllous cup, divided into five parts.—COROLLA, none. STAMINA, conſiſts of eight ſubulate ſpreading filaments, which are ſhorter than the cup; the antheræ are roundiſh and double.—PISTILLUM, a three-cornered oval germen, with three ſhort, ſlender, ſpreading ſtyles, and ſimple ſtigmas.—PERICARPIUM, none, the cup containing the ſeed, which is an oval-pointed nut of one cell.

The ſpecies are,

[1]COCCOLOBA *Uvifera.*

*Shining-leaved Sea ſide Grape.*] The leaves are round, thick, and heart-ſhaped, about ſix or ſeven inches diameter; it grows on the ſea ſhores in moſt of the Weſt Indian iſlands.

[2]COCCOLOBA *Rubeſcent.*

*Downy-leaved Sea ſide Grape.*] With orbicular hairy leaves, about eight inches long, and three or four broad; it is a native of New Spain.

[3]COCCOLOBA *Excoriata.*

*Mountain Grape.*] With light-green, oval, heart ſhaped leaves, whoſe foot-ſtalks are joined to the under part; it grows in Campeachy.

[4]COCCOLOBA *Tenuifolia.*

*Small-fruited, Sea-ſide Grape.*] With oval membranaceous leaves of a light-green, about ſix inches long and three broad; it is a native of Jamaica.

[5]COCCOLOBA *Punctata.*

*Veined-leaved Sea-ſide Grape.*] With lanceolate oval leaves, three or four inches long, and indented at their foot-ſtalks; it is a native of New Spain.

All the ſpecies are of the ſhrubby kind, inclinable to be woody; they riſe ſix or ſeven feet high, and bear grape-like bunches; the fruit of ſome of the ſpecies are eaten in the Weſt Indies, but they produce none here.

CORDIA, Sebeſten.

It conſiſts of four or five ſpecies, one of which is worthy of notice.

Claſs and order, *Pentandria Monogynia.*]

*Characters.*] CALIX, a modophyllous tubulated cup, dentated at the top ——COROLLA, monopotalous, and funnel-ſhaped. ——STAMINA, five ſubulate filaments, with oblong antheræ.——PISTILLUM, a roundiſh-pointed germen, with a ſingle ſtyle the length of the ſtamina, and divided at top into two parts, each of which terminate with a blunt ſtigma.—PERICARPIUM, a globoſe-pointed drupe, faſtened to the cup.——

SEMINA,

SEMINA, a furrowed nut, containing four cells.

The *Cordia Sebeſten* riſes eight or nine feet high, with divers ſtems of the ſhrub kind, which, toward the upper parts, are furniſhed with rough ovato-oblong leaves of a deep green colour, and placed alternately on ſhort foot-ſtalks; the flowers are produced at the extremities of the branches in large cluſters on branching foot-ſtalks, each ſuſtaining one, two, or three flowers, of a rich ſcarlet colour; but they produce no ſeed in this country.

*Propagation.*

As this plant is a native of the Weſt Indies, the ſeeds muſt be procured from thence, as by ſeeds all the ſpecies are propagated; theſe obtained ſhould be ſown in pots, and plunged into a hot-bed, and about two months after, the plants ariſing will be fit to tranſplant ſingly, and again plunged; afterward they muſt be removed into the ſtove, where they ſhould conſtantly be kept.

CROTOLARIA.

We have no Engliſh name for this genus, which conſiſts of ſeveral ſpecies, which are all natives of foreign parts; but as the flowers of moſt of them have no great beauty, we ſhall only notice one ſpecie which deſerves obſervation, this is *Crotolaria Laburnifolia.*

Claſs and order, *Diadelphia Decandria.*

*Characters.*] CALIX, a large cup divided into three parts.——COROLLA, is papilionaceous, conſiſting of a large, pointed, heart-ſhaped ſtandard, two ovate wings, ſhorter by half than the ſtandard, and an acuminated keel the length of the wings.—STAMINA, ten diadelphous filaments riſing upwards, crowned by ſimple antheræ. PISTILLUM, an oblong, reflexed, hairy germen, a ſimple ſtyle, riſing upwards, and an obtuſe ſtigma.—— PERICARPIUM, a ſhort, turgid, bivalvular pod, containing one or more roundiſh kidney-ſhaped ſeeds.

*Crotularia Liburnifolia*, riſes with a woody ſtem branching upwards, and furniſhed with oval pointed leaves about two inches long and one broad, of a light green, and are trifoliate; the flowers are produced at the ends of the branches in ſpikes, and are of a beautiful yellow colour; they blow the beſt part of the ſummer, and are ſucceeded by the pods and ſeeds; this plant being a native of India, requires a ſtove for its protection, though it will endure the open air in the warm ſummer months: it is propagated either by ſeeds or cuttings in the ſpring, but muſt be aſſiſted by a hot-bed.

D.

[3]DAPHNE *Cneorum.—Add,*

Daphne with ſhort woody ſtalks, of about nine or ten inches height, and furniſhed irregularly with ſmall lanceolate leaves of a dark green; the flowers are produced in cluſters along the extremities of the branches, and are of a purple colour; the ſcent of them is very agreeable, and as a farther recommendation they blow early in the ſpring when other flowers are ſcarce.

[4]DAPHNE *Indica.*

Daphne with a whitiſh woody ſtem, ſeldom growing above two feet high, with lateral upright branches, which are garniſhed with dark evergreen leaves, about an inch and a half long, and an inch broad, theſe are placed oppoſite to each other, they are ſmooth and of an oblong oval form; the flowers come out as the other ſorts, and are of a duſky colour.

The third ſort muſt be raiſed from ſeeds; they thrive beſt where they are ſown, as they rarely ſucceed by removing, and as they make an elegant pot flower, it would be eligible to ſow ſome ſeeds in ſmall pots, when they may at any time be ſhifted with balls ſo as not to miſcarry.

The fourth ſort is too tender to bear the open ground, it ſhould therefore be planted in a conſervatory, where it will thrive beſt; this plant is rather of ſtubborn growth, it is raiſed from ſeeds from abroad, which ſhould have a hot-bed to vegetate them.

DECIDUOUS PLANTS.

Such as caſt their leaves in winter, and is applicable to trees, ſhrubs, and herbaceous vegetables; and each of which tribes comprehend numerous Deciduous Plants; moſt of our valuable foreſt and fruit-trees are of the Deciduous kind; likewiſe the greater number of our moſt beautiful flowering ſhrubs that adorn the ſhrubberies are Deciduous; as are alſo a very great ſhare of the flowery perennials, both bulbous and fibrous-rooted kinds.

DIOSPYROS, Date Plum.

This genus are very ornamental plants for the ſhrubbery; the leaves being of a fine

green make a good contraſt with thoſe of other trees whoſe ſhape and tints are different.

Claſs and order, *Polygamia Dioecia.*

*Characters.*] *Hermaphrodite*, CALIX, a large, monophyllous, permanent, obtuſe cup, divided into four parts.—COROLLA, one large pitcher-ſhaped petal, divided into four acute ſpreading angles.—STAMINA, eight ſhort, ſetaceous filaments, firmly joined to the receptacle with oblong antheræ, which are deſtitute of farina.—PISTILLUM, a roundiſh germen, a ſingle, quadrifid, permanent ſtyle, longer than the ſtamina, and an obtuſe bifid ſtigma.—PERICARPIUM, a large globular berry of eight cells placed on the large patent cup.—SEMINA, the ſeeds are ſingle, roundiſh, compreſſed, and very hard.

*Male Flowers in diſtinct Plants.*

CALIX, a ſmall, erect, acute, monophyllous cup.——COROLLA, a three-cornered, pitcher-ſhaped, leatherey petal, cut into four roundiſh, revolute ſegments.—STAMINA, are eight ſhort filaments, inſerted in the receptacle, having long, acute, twin antheræ.

The ſpecies are,

[1]DIOSPYROS *Lotus.*

*Indian Date-Plum.*] Dioſpyros with an upright ſtem, and grows to the height of twenty feet; the branches are covered with a ſmooth whitiſh bark, the buds on the younger ſhoots begin to ſwell ſoon after the leaves are ſhed; the leaves are of a bright green, their figure is oblong, ending in a point, and are placed alternately on the branches, continuing green till they fall off in autumn; the flowers have no great beauty, they are of a rediſh colour, and are ſucceeded by large black berries, which are eatable like the medlar when in a ſtate of decay.

[2]DIOSPYROS *Virginiana.*

*Piſhamin-Plum.*] Dioſpyros with whitiſh ſmooth branches, growing in an irregular manner to the height of twelve or fourteen feet; the leaves are of a fine ſhining green, and five or ſix in length; at the time of their ſhedding, which is early in autumn, they turn to a purpliſh red, the flowers are like thoſe of the other ſpecies, and are ſucceeded by fruit, which are alſo eatable.

*Propagation.*

They are both raiſed from ſeeds, which need not the aid of a hot-bed, though they would come up more certain and quicker with one: in ſuch caſe they ſhould be ſown in pots, and when inured to the open air by degrees, ſhould remain undiſturbed until autumn, or rather till the ſpring, when they may be tranſplanted into a warm part of the nurſery, there to remain till they are arrived to a ſize fitting for the plantation they are deſigned for.

F.

[4]FRAXINUS *Integrifolia.*—*Add,*

*Entire-leaved Aſh.*] Hath oval-pointed entire leaves, grows to thirty feet; but as it has been diſcovered but a few years in Yorkſhire, and not flowered, botaniſts have not yet determined whether it is a diſtinct ſpecies, or only an accidental variety of the common aſh; though it certainly claims a ſpecific title, as all the other ſpecies are furniſhed with winged leaves.

G.

GORTERIA.

Conſiſts of ſhrubby plants, with naked branching flowers and downy ſeeds.

Claſs and order, *Syngeneſia Polygamia Fruſtanea.*

*Characters.*] CALIX, the common cup is monophyllous, and formed of prickly ſcales placed imbricatum.—COROLLA, is radiated and compound; the hermaphrodite florets fill the diſc, which are radiated with a few females.——STAMINA, five ſhort filaments, with cylindric antheræ.—PISTILLUM, a villoſe germen, ſlender ſtyle, and a bifid ſtigma.——PERICARPIUM, the calix which remains, the ſame containing ſolitary roundiſh ſeeds, crowned with down.

The ſpecies are.

[1]GORTERIA *Ringens.*

This is a low-growing plant, whoſe woody branches ſpread on the ground, and furniſhed with winged lanceolate leaves, parted into three or five parts at their extremities; the flowers which proceed from the branches are radiated, of a fine deep yellow colour, and appear in May.

[2]GORTERIA *Fruticoſa.*

Gorteria with a ſhrubby ſtalk, which riſes about three feet high, furniſhed with ſlender branches, on which are placed oblong indented leaves, armed at the edges with weak ſpines; their under-part are woolly, but ſmooth and green on the upper ſurface; the branches bear the flowers at their extremities, which are of a golden colour, and blow in June.

There are two or three other ſpecies, which are ſcarce worth mentioning.

They are propagated by cuttings in the ſummer months, being covered with glaſſes, and muſt be ſheltered in a green-houſe in winter.

GUILANDINA, *Bonduc*, or Nickar-tree.

There are ſeveral ſpecies of Guilandina, but the kind we ſhall mention here is hardy, and will endure our ſevereſt winters, the others being natives of the hotteſt climates.

Claſs and order, *Decandria Monogynia.*

*Characters.*] CALIX, a monophyllous bell-ſhaped cup, cut at the brim into five parts.—COROLLA, five ſpear-ſhaped, concave, ſeſſile petals.——STAMINA, ten awl-ſhaped erect filaments, inſerted in the cup.—PISTILLUM, an oblong germen, with a ſlender ſtyle, and ſimple ſtigma.—PERICARPIUM, A rhomboidal, ſwelling, compreſſed, unilocular pod, having a convex future on the upper-ſide, containing one cell, and divided into many partitions by tranſverſe valves, in each of which are lodged a hard, roundiſh, and compreſſed ſeed.

The hardy ſpecies is,

GUILANL A *Dioica.*

*Canada Bonduc or Nickar-tree.*] The Bonduc riſes with a ſtem, which is firm and erect, to the height of fifteen or twenty feet, from which iſſues ſeveral branches, having a ſmooth, bluiſh, aſh-coloured bark; the leaves are bipinnate, of a dark-green, and the folioles are large, ſmooth, entire, and ranged alternately on the midril; the flowers are dioecious, there being male and female on different plants; they appear in July or Auguſt, but produce no ſeeds here.

*Propagation.*

This ſpecies is encreaſed by ſeeds procured from Canada and ſown in the ſpring, by layers in autumn, ſlitting them at a joint, or by the roots being cut and turned up in winter.

H.

HALESIA.

Conſiſts of two ſpecies, both of which are deciduous, ornamental, hardy ſhrubs, fitting to intermix with others in ſhrubbery plantations.

Claſs and order, *Dodecandria Monogynia.*

*Characters.*] CALIX, a ſmall, permanent, monophyllous cup, divided at the edge into four parts.—COROLLA, is ventricoſe, bell-ſhaped, and monopetalous, with the mouth cut into four obtuſe ſpreading parts.—STAMINA, are twelve ſubulate, upright, filaments, topped with oblong blunt antheræ.—PISTILLUM, an oblong germen, laying in the bottom of the cup; the ſtyle is ſlender, and crowned with ſingle ſtigma.—PERICARPIUM, an oblong corticated nut, with four membranaceous angles, and containing two cells, in each of which are depoſited a ſingle ſeed.

The ſpecies are;

¹HALESIA *Tetraptera.*

*Quadrangular-fruited Haleſia.*] This ſpecies frequently produces two or three ſtems from one root, which riſe to fifteen feet high, or upwards; the branches which ſpring from the principal ſtems are furniſhed with lanceolate oval leaves, jagged on their edges; the flowers which are of a white colour are produced in cluſters on the ſide of the branches, and the fruit is four-cornered.

²HALESIA *Diptera.*

*Two-angled Haleſia.*] Hath the ſtems like the firſt ſpecies; the leaves are oval, and their foot-ſtalks ſmooth; the fruit has two edges, which are winged.

This genus is propagated by ſeeds or layers; the ſeeds ſhould be ſown in the ſpring on a hot-bed, and treated in the ſame manner as many other Carolina plants are of the ſame nature. They may alſo be raiſed by laying; this may be done in autumn, by the laſt ſummer's ſhoots being brought down, firſt notching them in a joint, and the autumn following they will be fit to be taken off, and tranſplanted into the nurſery, where they may remain till arrived to a proper ſize to tranſplant for good.

L.

LAWSONIA.

Conſiſts of two ſpecies of tree-like plants, producing bunches of octandrious flowers.

Claſs and order, *Octandria Monogynia.*

*Characters.*] CALIX, a ſmall quadrifid permanent cup.—COROLLA, four oval ſpear-ſhaped petals, which are flat and ſpreading.—STAMINA, eight ſlender filaments of the length of the corolla.——PISTILLUM, is a roundiſh germen, with a ſingle perſiſtent ſtyle, crowned with a capitated ſtigma.—PERICARPIUM, a globular capſule ending in a point, containing four cells, in which are many angulated pointed ſeeds.

The ſpecies are,

¹LAWSONIA

[1]LAWSONIA *Inermis.*

*Egyptian broad-leaved Lawſonia.*] This riſes with a ſhrubby ſtalk, eight or nine feet high, the branches are ſlender, and are produced oppoſite to each other; the bark is of a yellowiſh colour, and they are furniſhed with ſmall-pointed leaves of a pale green; the flowers come out at the end of the branches in looſe bunches of a greyiſh colour, which are ſucceeded by capſules and ſeeds.

[2]LAWSONIA *Spinoſa.*

*Malabarian thorney Lawſonia.*] Is a tree which grows to the height of ſixteen or eighteen feet; the bark is of a light grey colour, the branches are produced as in the former ſpecies, and armed with ſtrong ſpines; the leaves are irregularly ſituated along the branches; they are of an oval-oblong figure, and of a light green, the flowers are produced from the ſides of the branches in looſe bunches, and are of a light-yellow colour; theſe are ſuccceeded by capſules of four cells, which contain the ſeeds.

Both ſpecies are propagated by ſowing the ſeeds in the ſpring on a hot-bed; and when the plants are up, and got to about three or four inches high, they ſhould be tranſplanted ſingly into ſmall pots, and replunged, obſerving to ſhade them till they have taken freſh root; they will bear the open air during the hot months in ſummer, and may be placed in the cooleſt part of the ſtove in winter, minding to give them but little water.

LEONURUS, Lion's-tail.

This conſiſts of herbaceous perennial plants, the flowers of which are of the labiated kind, and produced in whorls; there is one beautiful ſpecies which is cultivated in our gardens.

Claſs and order, *Didynamia Gymnoſpermia.*

*Characters.*] CALIX, a monophyllous, tubulous, pentangular cup, which is permanent, and indented in five parts at the top.—COROLLA, a ringent petal, the tube is narrow, the limb gaping, and the chaps long; the upper-lip is ſemicylindrical, long, concave, gibbous, rounded at the top, hairy, and entire; the lower-lip is reflexed, and divided into three ſpear-ſhaped ſegments, which are nearly equal.——STAMINA, four filaments concealed under the upper-lip, of which two are ſhorter than the others; theſe are crowned with long compreſſed, bifid antheræ.——PISTILLUM, four germens, a filiforme ſtyle, the length and ſituation of the ſtamina, with a bifid acute ſtigma.—PERICARPIUM, none; the ſeeds are lodged in the cup.—SEMINA, four oblong ſeeds, convex on one ſide, and angular on the other.

The ſpecie is,

LEONORUS *Indicus.*

*Scarlet Lion's-tail.*] The root of this is perennial, from which ariſes ſeveral annual ſquare ſtalks, near a yard in height; theſe are garniſhed with ſpear-ſhaped ſerrated leaves, which grow oppoſite to each other at the joints; the flowers are of a rich ſcarlet, they appear in June or July, and frequently continue blowing the remainder of the ſummer.

This plant is propagated by dividing the roots in autumn; they grow beſt in a moiſt ſoil, and a ſhady ſituation, but not under the drip of trees; they may alſo be raiſed from ſeeds ſown either in autumn or ſpring.

LEPIDIUM. Garden Creſs.

Conſiſts of hardy herbaceous annuals of great eſtimation as ſmall-ſallad herbs; they riſing with many ſmall multifid leaves near the ground; and when they ſhoot to ſtalk, riſe a foot or more high, terminated by many ſmall, tetrapetalous, cruciform flowers, ſucceeded by ſmall ovaliſh ſeeds.

Claſs and order, *Tetradynamia Siliculoſa.*

*Characters.*] CALIX, a four-leaved deciduous cup.——COROLLA, four ſmall, oval, cruciform petals.—STAMINA, four long and two ſhort filaments, and ſimple antheræ.—PISTILLUM, a heart-ſhaped germen, ſimple ſtyle and obtuſe ſtigma.—PERICARPIUM, a nearly heart-ſhaped, compreſſed, bilocular pod, having very ſmall, oval, pointed ſeeds.

There is only one ſpecies of Garden Creſs, comprehending three varieties, all excellent ſallad herbs.

LEPIDIUM *Stativum.*

*Cultivated or Common Garden Creſs.*] Riſes with ſmall oblong leaves near the ground, multifid or cut into many parts; and erect ſtalks a foot or two high, terminated by many ſmall flowers in ſummer, ſucceeded by numerous ſmall red ſeeds, ripening in June, July, &c.

*Varieties.*] Common ſmall multifid-leaved Creſs, having the leaves finely divided.—Broad-leaved Creſs, having the leaves much broader than the former, and leſs divided.—Curled-leaved Creſs.

All the varieties are proper to cultivate as ſmall-ſallad herbs, being of a warm or hot biting reliſh, are excellent to mix with larger ſallading, ſuch as lettuce, endive, &c. See SALLAD HERBS and SMALL SALLADING.

They are all propagated by ſeed ſowed at many different times of the year, in order to continue a conſtant ſucceſſion of young plants for uſe, for theſe herbs ſhould always be cut for ſallading when they are only a few days old; otherwiſe they will be too hot and ſtrong taſted.

Therefore when a conſtant ſupply of thoſe ſallad herbs are required, they ſhould be ſowed every week all ſpring, ſummer, and autumn, and once every ten or twelve days in winter.

They ſhould be ſowed on warm borders early in ſpring; but as the warm weather advances, ſow them in any open ſituation; but in ſummer ſhould be ſowed in ſomewhat ſhady borders, and in winter ſowed in garden-frames, or under hand-glaſſes, and in ſevere weather are ſowed in hot-beds.

And as to the method of ſowing the ſeed, ſhould be ſowed very thick, either in ſhallow drills and covered a quarter of an inch deep, or all over the ſurface, and lightly raked in. See SMALL SALLADING.

LIMODORUM, Baſtard Hellebore.

An herbaceous exotic, very ornamental in the ſtove, containing only one ſpecies.

Claſs and order, *Gynandria Diandria.*

*Characters.*] CALIX, a ſheath from which the flower iſſues.—COROLLA, five oval oblong petals, the two upper ones connivent, and a monophyllous concave nectarium the length of the petals.—STAMINA, two, the filaments are in an oblong body, and riſing upwards, theſe are topped with ovate twin antheræ.——PISTILLUM, a columnar germen the length of the corolla, and placed below the flower, the ſtyle is ſlender, and growing from the body of the filaments, is crowned with a funnel-ſhaped ſtigma.—PERICARPIUM, a columnar capſule, with three valves, and one cell opening at the angles, containing many ſcobiform ſeeds.

The ſpecie is,

LIMODORUM *Tuberoſum.*

*Baſtard Hellebore* ] The root is of the bulbous kind, from whence ariſes three or four leaves, each narrowed at the baſe, and ending in a point, theſe are plaited; they are of a dark-green colour, and are nine or ten inches long, and one wide in the middle; the flower-ſtalk ariſes from the root to about eighteen inches high, this is ſmooth and of a brown purple colour; on the extremity of which the flowers are placed in a ſpike, about five or ſix in number, and inclining all one way; they are of a purpliſh-red colour, and are ſucceeded by a three-cornered columnar germen, which contain the ſeeds.

This plant ſhould be always kept in the ſtove; it is encreaſed by off-ſets, which ariſe from the roots; theſe may be taken off in autumn or ſpring, and planted ſingly into ſmall pots, and immediately plunged into the bark-bed.

M.

MIMULUS, Canada perfoliate Fox glove.

This genus comprehends one beautiful perennial ſpecies.

Claſs and order, *Didynamia Angioſpermia.*

*Characters.*] CALIX, an oblong, priſmatic, five-cornered, permanent cup, indented in five patrs at top.—COROLLA, one ringent petal; the limb is bilabiated, the upper-lip is erect, bifid, rounded, and reflexed on the ſides; the lower-lip is broad, and cut into three roundiſh ſegments, the middle one being the ſmalleſt; the palate is convex and bifid.—STAMINA, four filiforme filaments, two being ſhorter than the others, with bifid kidney-ſhaped antheræ.—PISTILLUM, a conical germen, the ſtyle ſlender, and an oval bifid, compreſſed ſtigma.—PERICARPIUM, an oval bilocular capſule, containing many ſmall ſeeds.

The ſpecie is,

MIMULUS *Ringens.*

*Canada prefoliate Fox-glove.*] The ſtalks of this plant are ſquare-jointed, and riſe upright about two feet; the leaves ſurround the ſtalk at each joint, they grow oppoſite, and are oblong, ſmooth, and pointed; the flowers are produced ſingly from the joints at the baſe of the leaves, and are large and of a beautiful blue colour; they appear in July, and are ſucceeded by capſules filled with ſeeds.

This ſpecies is propagated either by parting the roots or by ſeeds; the beſt time for either is autumn.

MORINA.

A hardy perennial plant, with upright deciduous

ciduous ſtalks, and prickly leaves, producing labiated flowers.

Claſs and order, *Diandria Monogynia.*

*Characters.*] CALIX, a double cup, each monophyllous, permanent, and tubular, cut at the top into two ſegments.—COROLLA, a bilabiated petal, with a very long tube, ſlender near the baſe, but wide and large at the top, and a little incurved, the limb is plane and obtuſe, the upper-lip is ſmall and ſemibifid; the lower-lip is cut into three obtuſe ſegments, the middle one being the longeſt. —STAMINA, two ſetaceous filaments, ſhorter than the limb, with erect, heart-ſhaped antheræ. — PISTILLUM, a globoſe germen, placed under the receptacle of the flower, a ſlender ſtyle, and a capitated, peltated, inflexed ſtigma.—PERICARPIUM, none; the ſeed which is ſingle and roundiſh ſtands in its own permanent cup, and is crowned with the empalement of the flower.

The ſpecie is,

MORINA *Perſica.*

*Oriental Morina.*] The root of this plant is large, taper, oblong; ſtrikes deep in the ground, and is furniſhed with many fibres; the radical leaves are very large and oblong, divided at their edges, armed with prickles, and of a bright green colour; the ſtalk is ſmooth, upright, and ſtrong, riſing to about a yard high, and furniſhed with leſſer leaves of the ſame form as the radical; the flowers are produced at the ſides and heads of the ſtalks in ſmall heads; they appear in July, are of different colours; theſe are ſucceeded by the ſeeds.

The varieties of this ſpecie are the white, —purple,—pale-red,—deep-red.

This plant is propagated by ſowing the ſeeds when ripe; and as the roots are of the tap kind, the ſowing ſhould be where the plants are intended to flower; they will come up the ſucceeding ſummer, and the year following will exhibit their bloſſoms, which they will continue to do for ſeveral years following, if not diſturbed.

## N.

### NOLANA.

An herbaceous trailing plant, much admired for the beauty of its pentandrious flowers.

Claſs and order, *Pentandria Monogynia.*

*Characters.*] CALIX, a monophyllous cup, turbinated, divided into five parts, and five angles. — COROLLA, monopetalous, bell-ſhaped, plicated, and ſpreading, and double the ſize of the cup.—STAMINA, five erect awl-ſhaped filaments, ſhorter than the corolla, and topped with ſagittate antheræ—PISTILLUM, five roundiſh germens; the ſtyle is cylindric and ſtrait, with a capitated ſtigma. ——PERICARPIUM, none; but the ſeeds which are five, roundiſh, and of a ſucculent bark, are lodged in the inner baſe of a naked receptacle.

We know but of one ſpecies belonging to this genus.

NOLANA *Proſtrata.*

The root is fibrous, from which iſſues a few trailing ſtalks furniſhed with deltoid leaves, about the length and breadth of an inch, of a dull-green colour; the flowers come out from the ſides of the branches; they are of a fine blue colour, penciled with dark ſtreaks, half way from the center to the limb, and the antheræ are of a light blue colour, which adds much to the beauty of the flower.

The Nolana is annual, it is raiſed by ſeeds ſown on a hot-bed in the ſpring; the plants afterwards may by degrees be hardened to the open air, in which it will blow beſt part of the ſummer.

### NYSSA, the Tupelo tree.

An ornamental tree, for the plantations, particularly where it is warm and moiſt, it is a native of North America.

Claſs and order, *Polygamia Dioecia.*

*Characters.*] *Male.*—CALIX, a peranthium, divided into five ſpreading ſegments.—COROLLA, none.—STAMINA, ten awl-ſhaped filaments, ſhorter than the cup, with didymous antheræ —*Hermaphrodite.*—CALIX and COROLLA, the ſame as the male.--STAMINA, five ſubulate filaments, with ſingle antheræ —PISTILLUM, an oval germen, ſituated under the receptacle, a ſubulated incurved ſtyle, longer than the ſtamina, and an acute ſtigma.—— PERICARPIUM, an oval drupe of one cell, containing an oval acute nut, marked with longitudinal furrows, angular and irregular.

The ſpecie is,

NYSSA *Aquatica.*

*The Virginian Tupelo-tree.*] This tree riſes with a regular trunk near twenty feet high, on the top of which ſeveral branches grow; the leaves are ſpear-ſhaped, ſoft, of a thickiſh conſiſtence, and ending in acute points; they are very ornamental, of a fine light-green colour, grow alternately on pretty long foot-

foot-ſtalks, and retain their colour late in autumn.

*Varieties.*] Entire-leaved Tupelo,—ſerrated-leaved, or multiflorous Tupelo.

Their propagation is from ſeeds, which muſt be procured from America, but as the ſeeds come not up the firſt year they may be buried in pots of mould, and plunged where the ground is naturally moiſt, ſcreening them from the froſt in winter; the ſpring following let them be plunged in a hot-bed, which will ſoon vegetate the ſeeds, if they are good, and the plants will quickly appear, after which allow them a tolerable ſhare of air, and harden them to it by degrees: the autumn following they ſhould be ſheltered in a green-houſe, or glaſs-frame during the winter; the third ſpring they ſhould be ſeparated and planted ſingly into ſmall pots, and again plunged, &c. as before; ſhelter them again another winter, and in the ſpring following they may be planted where they are intended to remain, which ſhould be in a well-ſheltered and moiſt ſituation.

## O.

OSYRIS, Poet's Caſſia.

A plant of the ſhrubby kind; it grows naturally in the ſouth of France, Italy, and Spain, upon rocky, ſandy, or ſtony places.

Claſs and order, *Dioecia Triandria.*

*Characters.*] *Male.*—CALIX, a monophyllous turbinated cup, cut into three equal, oval, acute ſegments.—COROLLA, none.—STAMINA, three very ſhort filaments, with ſmall roundiſh antheræ.—*Female*, CALIX and COROLLA, as the male.—PISTILLUM, a top-ſhaped germen, ſituated below the cup, with a ſtyle the length of the ſtamina, and a ſtigma divided into three ſpreading parts.—PERICARPIUM, a globular umbilicated berry of one cell, containing the ſeed, which is a globular *oſſiculum* filling the pericarpium.

The ſpecie is,

OSYRIS *Alba.*

*Poet's Caſſia.*] This ſpecies riſes with a ſhrubby branching ſtalk to about two feet high; the leaves which are of a bright green are long, narrow, and pointed; the flowers appear in June, they are ſmall and of a yellowiſh-green colour, and ſucceeded by middle-ſized roundiſh berries, which when ripe are of a bright red colour.

The propagation of this plant is by ſowing the berries on the rocky, ſandy, or gravelly ſide of a hill, in the places where they are intended to remain, for as the beauty of this plant conſiſts in its fruit, it will not ſo well ſucceed by raiſing them in the cultivated part of the garden, the berries always dropping off before they are come to maturity; the berries ſhould be ſown in autumn when ripe, and as they often remain in the ground two or three years before they vegetate, the places where they are ſown ſhould therefore be marked and all weeds kept clear from them.

## P.

PANAX, Ginſeng.

A genus of herbaceous umbeliferous plants, the root of which is much celebrated among the Chineſe and Tartars, who affirm, it is a ſovereign remedy for all kinds of diſorders; its excellency conſiſts in being reſtorative, and a great ſtrengthener to the ſtomach.

Claſs and order, *Polygamia Dioecia.*

*Characters.*] *Hermaphrodite.*——CALIX, a ſimple, equal, and cloſe umbel; the involucrum is compoſed of ſeveral awl-ſhaped, ſmall, permanent leaves; the proper cup is ſmall and permanent.—COROLLA, the general flower is uniform; the florets have each five equal, oblong, recurved petals.—STAMINA, five very ſhort filaments, with ſingle antheræ—PISTILLUM, a roundiſh germen placed below the flower, with two ſmall upright ſtyles, topped with ſimple antheræ.——PERICARPIUM, a heart-ſhaped umbilicated berry with two cells, each containing a ſingle heart-ſhaped ſeed.—*Male.*—CALIX, a ſingle and round umbel; the involucrum is compoſed of ſeveral ſpear-ſhaped folioles, which are ſeſſile, and the peranthium is turbinated, whole, and coloured.—COROLLA, is five oblong, blunt, narrow, reflexed petals, ſitting on the cup.—STAMINA, five filiforme filaments, inſerted in the cup, having ſimple antheræ.

Of this genus there are two ſpecies.

PANAX *Quinqueſolium.*

*Or five-leaved Ginſeng.*] This plant has a fleſhy taper root, browniſh without, and yellow within, about a third of an inch in diameter on the upper-part, and of an agreeable bitter flavour; from this ariſes the ſtalk, to the height of about a foot, of a reddiſh colour, dividing at the top into three or four bunches, which ſupport the leaves; theſe are quinate,

quinate, of a pale-green colour, the folioles of which are lanceolate, hairy, and ſerrated; the flowers come out in umbels; they appear in June, and are ſucceeded by the ſeeds, which ar[illegible]e in Auguſt.

[2]PANAX *Trifolium.*

*Three-leaved Ginſeng.*] Hath a ſmall, taper, fleſhy root, with trifoliate leaves, which are cut deeply on their edges; the flowers are produced in ſmall bunches on foot-ſtalks; they are ſmall and greeniſh.

POLYGALA, Milkwort.

This genus conſiſts of herbaceous, perennial plants, the ſtalks riſing from eight inches to eighteen, according to the different ſpecies, they are furniſhed with ſpear-ſhaped leaves and flowers growing in ſpikes.

Claſs and order, *Diadelphia Octandria.*

*Characters.*] CALIX, a ſmall cup, compoſed of three oval, acute, permanent leaves, two of which are below the corolla, and the other above it.—COROLLA, papilionaceous; the wings are large, oval, plane, and placed beyond the other parts of the corolla; the vexillum is ſhort, tubular, and a little reflexed, and bifid at top; the carina is concave, compreſſed, and ventricoſe towards the apex.—STAMINA, diadelphous filaments, with eight ſimple antheræ.——PISTILLUM, an oblong germen, a ſimple erect ſtyle, and a thickiſh bifid ſtigma.—PERICARPIUM, a turbinated, heart-ſhaped, compreſſed capſule, compoſed of two valves, having two cells, containing each a ſingle oval ſeed.

The ſpecies are,

[1]POLYGALA *Vulgaris.*

*Common Milkwort.*] This hath a root, which is long, ſlender, and white; the ſtalks are ſlender, herbaceous, growing on the ground, ſix or eight inches in length; the leaves are ſmooth, narrow, ſpear-ſhaped, pointed at the end, and of a bright-green colour, the flowers are produced from the ends of the ſtalks in creſted ſpikes; they appear in June, and the ſeeds ripen in Auguſt.

*Varieties.*] Blue,—red,—white violet-coloured,—ſtriped milk-wort,

[2]POLYGALA *Amara.*

*Bitter Milkwort.*] The radical leaves are large and oval, the ſtalks are herbaceous, erect, and ſix or eight inches high; the flowers are produced on the tops of the ſtalks in creſted ſpikes of different colours; but chiefly blue; they appear in June, and the ſeeds ripen in Auguſt. This plant is intolerably bitter to the taſte.

[3]POLYGALA *Microphylla.*

*Shrubby Portugal Milkwort.*] The ſtalks are ſmall, ligneous, of a green colour, growing about a foot high; the leaves which are placed alternately, are ſmall, oval, awl-ſhaped, narrow, and ſeſſile; the flowers are produced in ſhort ſpikes on the tops of the ſtalks in May and June; they are large, and often of two or three colours; the ſeeds ripen in Auguſt.

[4]POLYGALA *Chamæbuxus.*

*Dwarf Box Milkwort.*] The ſtalks are ſlender, ligneous, and branching, about a foot high, the leaves are numerous, ſpear-ſhaped, ſmooth, and of a bright-green colour; the flowers come out from the ſides of the ſtalks towards the upper-part; they are white without-ſide, with a mixture of purple and yellow within; they are very finely ſcented, and appear in May.

[5]POLYGALA *Senega.*

*Senega Milkwort, or Rattle-ſnakewort.*] Hath a thick, fleſhy, perennial root, which ſtrikes deeply into the ground, from which ariſe three or four ſtalks, about half a yard high; theſe are herbaceous, upright, and ſlender; the leaves are ſpear-ſhaped, broad, and grow alternately; the flowers are produced at the ends of the ſtalks in ſpikes, they are ſmall, of a white colour, appear in July, but ſeldom produce ſeeds in England.—The virtues of the root of this plant, when ſufficiently known, will be very great in medicine; it is allowed to be a powerful cleanſer of the blood, a fine diuretic, diaphoretic, and cathartic; it is uſed in hydropic caſes, pleuriſies, &c. but what makes it remarkable, is its being an infallible cure for the bite of a rattle-ſnake, if uſed in time, by reducing it to powder, rubbing the wound with it, and taking about thirty grains internally.

*Propagation.*

The firſt and ſecond ſorts are eaſily propagated by ſowing the ſeeds when ripe, and keeping the ground clear of weeds; the third and fourth ſorts are raiſed in the ſame manner, but require ſome protection from the froſts in winter: the fifth ſort is alſo raiſed from ſeeds procured from America; they ſhould be ſown in light, warm, ſandy ground, and in winter protected from the ſeverity of the weather.

[6]POPULUS

[6]POPULUS *Canadenſis.—Add,*

*Canadian Poplar.*] Riſes with a ſtrait trunk, regularly branching to a conſiderable height; the bark is whitiſh, the leaves are roundiſh, ending in an obtuſe point, and the border waved, and of a light-green colour.

[7]POPULUS *Græcæ.*

*Athenian Poplar.*] Riſes with a ſtrait whitiſh ſtem, growing ſix or ſeven feet in a year, furniſhed with branches, which are garniſhed with large cordate leaves, of a beautiful green colour: this Poplar has but of late years been introduced into England, and by the rapidity of its growth, and the beauty of its leaves, bids fair to be the fineſt plant of all the ſpecies.

This ſpecies is beſt propagated by graſting on the Lombardy; but as it out grows the ſtock, it ſhould therefore be graſted cloſe to the ground.

PROTEA. The Silver-tree.

A genus of green-houſe plants of the perennial, evergreen, woody kind, growing to the height of eight or ten feet, and ornamented with beautiful ſilvery leaves, very much like ſattin.

Claſs and order, *Tetandria Monogynia.*

*Characters.*] CALIX, a general imbricated perianthium, containing many florets, each having a monophyllous cup.—COROLLA, the general flower, which is uniform, conſiſts of many monopetalous florets, cut at the limb into four parts, which are ſmooth and ſpreading.—STAMINA, four filaments inſerted in the corolla, and incumbent antheræ.——PISTILLUM, a roundiſh germen, erect ſetaceous ſtyle, and obtuſe ſtigma.——PERICARPIUM, none; one ſeed to each floret lodged in its calix.

The ſpecies are,

[1]PROTEA *Argentea.*

*Cape Protea or Silver-tree.*] Hath a ſtrong upright, ſtalk, with a purpliſh bark; this divides into ſeveral erect branches, which are garniſhed with broad, lanceolate, ſilky-white, ſhining leaves, which continue all the year, rarely flowering in England.

[2]PROTEA *Conifera.*

*Cone-bearing Protea.*] Hath an upright ſtem, dividing into branches upwards, which are garniſhed with lanceolate, linear, entire leaves, of a ſhining ſilvery colour, the whole plant making a fine appearance.

Both ſorts are propagated by ſeeds procured from the Cape of Good Hope; theſe ſhould be ſown on a moderate hot-bed in the ſpring, and when the plants are up, ſhould be houſed in any airy glaſs-caſe, or the cooleſt part of the green-houſe; but by no means put them in the ſtove, which is certain death to them, as they cannot bear fire heat, requiring only to be ſheltered from froſt, &c.

S.

SARRACENIA, Side-ſaddle flower.

A genus much admired for the ſingularity of their leaves and flowers; they are perennial and herbaceous, the leaves are numerous, of a peculiar conſtruction, and the flowers are ſingle and polyandrious: it admits of two ſpecies.

Claſs and order, *Polyandria Monogynia.*

*Characters.*] CALIX, a double perianthium, the lower are compounded of three ſmall, oval, deciduous leaves, and the upper one of five large coloured leaves, which alſo fade away.—COROLLA, five oval inflexed petals covering the ſtamina with oval oblong claws.—STAMINA, a number of ſmall filaments, topped with ſimple antheræ.—PISTILLUM, a roundiſh germen, the ſtyle very ſhort and cylindric, topped with a cylpeated, peltated, quinquangular ſtigma, covering the ſtamina.—PERICARPIUM, a five-celled roundiſh germen, containing many roundiſh-pointed ſmall ſeeds.

The ſpecies are,

[1]SARRACENIA *Purpurea.*

*Purple Sarraſenia.*] Hath a fibrous root, ſtriking deep in the ground; the leaves are pitcher-ſhaped, of a firm ſubſtance, ariſing from a ſmall baſe, and widening by degrees to the neck in an upright poſition, ſo as to contain a quantity of water; from the root ariſes the flower ſtem; it grows to the height of half a yard, and is round, naked and upright; the flowers decorate the top of the ſtalks, and are ſingle, large, of a fine purple colour, and hang drooping; they appear in June, and ſometimes the ſeeds ripen in autumn.

[2]SARRACENIA *Flava.*

*Yellow Sarracenia.*] Hath a root like the former; the leaves are numerous, hollow, ſtanding on a ſlender baſe, wide at the top, and grow to the height of a yard; the ſtalks are naked, on the tops of which the flowers are produced, which grow ſingly, and of a yellow colour, and come out in June or July;

a va-

a variety of this ſpecies hath green flowers. Theſe plants are natives of moiſt boggy places in North America; their ſituation in England ſhould therefore be ſimilar; but ſevere froſts ſhould be guarded againſt for their protection; the readieſt way of procuring, (if not in England), is to have them from North America, as there is at preſent no mode of propagation here, yet diſcovered.

SOPHORA.

Conſiſts of a genus of perennial plants, whoſe leaves are winged, and the flowers produced in ſpikes.

Claſs and order, *Decandria Monogynia.*

*Characters.*] CALIX, a ſhort monophyllous, bell-ſhaped cup, divided at the top into five oblique blunt ſegments.—COROLLA, papilionaceous and quinpetalous; the vexillum is oblong, broader at top, and reflexed on the ſides; the wings are two, oblong and appendiculated at their baſe; the carina is compoſed of two petals like the wings, with their lower edges joined together.—STAMINA, ten diſtinct awl-ſhaped filaments concealed in the carina, with very ſmall aſſurgent antheræ.—PISTILLUM, an oblong taper germen, the ſtyle the ſize and ſituation of the ſtamina, and an obtuſe ſtigma.——PERICARPIUM, a long, ſlender, unilocular pod, containing many roundiſh ſeeds.

There are two ſpecies of this genus, which are hardy.

[1]SOPHORA *Alopecuroides.*

*Oriental Sophora.*] Hath a creeping root, from which the ſtalks ariſe; they are upright, and three or four feet in height, the leaves are winged, compoſed of many ſmall, oblong, hairy folioles, ending with an odd one; the flowers come out in ſpikes from the ſides and ends of the ſtalks, and are of a pale blue colour, appearing in July.

[2]SOPHORA *Tinctoria.*

*Virginian Sophora.*] Hath a perennial root, from whence ariſe many weak procumbent ſtalks; the leaves are compoſed of three roundiſh ſmooth folioles, which join at the baſe, and grow on very ſhort foot-ſtalks; the flowers are produced in ſhort ſpikes in July; they are of a yellow colour, and ſometimes ſucceeded by ſeeds, which ripen in autumn. To theſe may be added two other ſpecies, which are perennial, of the ſhrub kind, but being tender, require a ſtove.

[3]SOPHORA *Mirophylla.*

*Small-leaved Otaheite Sophora.*] This hath been lately introduced into this kingdom; the whole plant is very elegant, the leaves are winged, the folioles, which are numerous, are roundiſh, about a quarter of an inch long, of a dark green colour.

[4]SOPHORA *Tomentoſa.*

*Silvery Ceylon Sophora.*] Hath a downy ſtalk, riſing ſix or ſeven feet high; the leaves are winged, conſiſting of five or ſix pair of folioles, which are roundiſh and woolly; the flowers grow in ſpikes, and are of a yellow colour; theſe are ſucceeded by woolly taper pods, which contain the ſeeds.

The firſt and ſecond ſorts are propagated by parting their roots in autumn or ſpring; they may alſo be raiſed by ſowing their ſeeds.—The third and fourth are propagated by ſowing their ſeeds on a hot-bed; the plants from thence ariſing, when fit, ſhould be potted and plunged into the bark-bed in the ſtove, where they ſhould be conſtantly kept.

STAPELIA, Swallow-wort.

Conſiſts of two ſpecies of ſucculent, perennial plants, which are deſtitute of leaves, producing from the ſides of the ſtalks; variegated pentandrious flowers of a ſingular appearance.

Claſs and order, *Pentandria Digynia.*

*Characters.*] CALIX, monophyllous, ſmall, acute, divided into five parts, and perſiſtent.—COROLLA, monopetalous, large, flat, divided half way into five parts, and containing a ſtarry, five-pointed nectarium, with linear ſegments, whoſe lacerated points ſurround the parts of generation.—STAMINA, five plain, broad, erect filaments, with linear antheræ joined to the ſides of the filaments.—PISTILLUM, two oval plane germens, without a ſtyle, each having a blunt ſtigma.—PERICARPIUM, two oblong, ſubulate pods, with ſingle cells and valves, containing many imbricated compreſſed ſeeds, crowned with a pappoſe down.

The ſpecies are,

[1]STAPELIA *Maculata.*

*Spotted Stapelia or Fritillaria Craſſa Minor.*] Hath many ſucculent ſpreading branches, with ſeveral protuberancies on their ſides riſing about ſix inches; from the ſides of the branches are produced the flowers, which are ſingle, ſeldom ſhewing more than two at a time, which are continued in ſucceſſion, each conſiſts of a ſtellated petal, which ſpreads open, green on the outſide, but yellow within, and ſpotted with deep

purple; the centre is occupied by a coloured nectarium, which includes the parts of generation, when the flower is decayed; the germen are ſucceeded by two taper pods, which join at their baſe, and contain many ſeeds crowned with feathery down.

²STAPELIA *Hirſuta.*

*Hairy Stapelia or Frittillaria Craſſa Major.*] Hath upright ſucculent branches, which are angulated and indentured on the edges, and of a greeniſh-purple colour; from the ſides of the branches the flowers are produced; they are large, ſtellated, hairy, and variegated with purple ſtripes, which run acroſs the petal: both the ſpecies ſhew their flowers in the ſummer months, which are of ſo very fœtid a ſcent as to induce the fleſh-flies to lay their eggs thereon. Theſe plants ſhou'd be kept always in the ſtove on the flue or ſhelves, where they will blow every ſummer, obſerving to let them have but little water in winter. They are eaſily propagated by the branches being ſlipped off, and laying them by for a few days in the ſun to heal the wound, after which they may be put in pots with poor earth, not over moiſt, and plunged in the tan, where they will readily take root in any of the ſummer months.

## T.

TELEPHIUM, Orpine.

Conſiſts of a perennial plant, whoſe ſtalks are procumbent; the leaves ſmall, and oval, and the flowers produced in ſpikes.

Claſs and order, *Pentandria Trigynia.*

*Characters.*] CALIX, five oblong, blunt, concave, carinated, permanent leaves.—COROLLA, five oblong, obtuſe, erect petals, narrowed at the baſe.—STAMINA, five ſubulate filaments, with incumbent antheræ.—PISTILLUM, a three-ſided acute germen without a ſtyle, with three acute patent ſtigmas.—PERICARPIUM, a ſhort three-ſided capſules, formed of three valves and one cell, containing many roundiſh ſeeds.

The ſpecie is,

TELEPHIUM *Imperati.*

*Orpine of Imperatus, or Live-long.*] Hath a thick, hard, fibrous root, of a yellowiſh colour, the ſtalks which lie on the ground are numerous, round, ſlender, green, eight or ten inches long; the leaves are ſmall, oval, ſtiff, ſmooth, of a greyiſh colour, and grow alternately; the flowers are produced in ſhort, thick, reflexed ſpikes, and grow at the ends of the branches; their colour is white, appear in June or July, and the ſeeds are ripe in autumn. This plant is propagated by ſowing the ſeeds in autumn on a light and dry ſoil, where they are to remain; the ſucceeding ſpring the plants will be up, and the next year will bloom and ripen their ſeeds.

THEA. The Tea-tree.

An ever-green, woody, Chineſe plant, the dried prepared leaves of which are univerſally made uſe of; the flowers are polyandrious and roſaceous.

Claſs and order, *Polyandria Monogynia.*

*Characters.*] CALIX, a ſmall flat, perianthium, divided into ſix parts, the folioles of which are roundiſh, blunt, and perſiſtent.—COROLLA, ſix roundiſh, large, concave petals, which are equal.——STAMINA, many ſlender filaments, ſhorter than the corolla, with ſimple antheræ.—PISTILLUM, a three-cornered globoſe germen with an awl-ſhaped ſtyle, crowned with a tripple ſtigma,—PERICARPIUM, a trilocular capſule, joining in three round bodies, and opening at the top.—SEMINA, the ſeeds are ſingle, round and angulated at their backs.

There are ſuppoſed to be two diſtinct ſpecies, the leaves of which are imported in great quantities from China, and go by the denomination of green and bohea tea; but as it is not yet ſettled by botaniſts, whether the two ſorts are from one or diſtinct plants, we ſhall confine ourſelves to the ſort growing here in England.

THEA.

*The Tea-tree.*] Hath a fibrous root, from which riſes a ſtem covered with an aſh-coloured bark; the leaves are placed alternately on the branches; they are oval, obtuſely pointed, ſawed at their edges, are about two inches wide and four long, of a dark green colour; the flowers which come out from the ſides of the branches are roſaceous, and of a white colour; theſe are ſucceeded by a capſule with three cells, each containing a ſingle ſeed. The tea-tree is not ſo tender as many imagine, for it will not ſucceed well in the ſtove; there are ſome few planted in the natural ground, where they ſeem to thrive beſt; the ſituation ſhould be in a well ſheltered part of the garden, where it is not too moiſt, and in winter they ſhould be protected from ſevere weather; here they will thrive much better

better than keeping them in pots in the houſe, and will ſhew plenty of bloſſoms; they are propagated by layers.

V.

VACCINIUM, Whortle-berry, Bilberry, or Cranberry.

Comprehend a genus of dwarf ſhrubby plants, producing eatable fruit.

Claſs and order, *Octandria Monogynia.*

*Characters.*] CALIX, a very ſmall perianthium, ſituated above the germen.—COROLLA, a campanulated petal, divided at the brim into four revoluted ſegments.—STAMINA, eight ſimple filaments, with two horned antheræ, opening at the point, and furniſhed with two ſpreading ariſtæ on the outſide.—PISTILLUM, a germen ſituated below the cup, a ſingle ſtyle longer than the ſtamina, and an obtuſe ſtigma.—PERICARPIUM, a globular umbilicated berry, with four cells, containing a few ſmall ſeeds.

Of this genus are the following ſpecies.

[1]VACCINIUM *Myrtillis.*

*Bilberry or Black-whorts.*] Hath an angular, branching, ſhrubby ſtalks, growing to the height of about two feet; the leaves are oval, oblong, a little ſerrated, ſmooth, of a dark-green colour, and fall off in winter; the flowers come out ſingly from the ends and ſides of the branches, on foot-ſtalks of a greeniſh-white colour, appearing in April and May, which are ſucceeded by large eatable berries.

[2]VACCINIUM *Uliginoſum.*

*Great Bilberry.*] Hath a woody branching ſtalk, which riſes to about three feet; the leaves are thin, veined, oval, entire, and underneath whitiſh; the flowers grow ſingly on their ſeparate foot-ſtalks, are of a whitiſh-purple colour; they appear in April and May, and are ſucceeded by large berries which ripen in July.

[3]VACCINIUM *Album.*

*White Bilberry.*] Hath a ſtalk which riſes to about half a yard in height, is woody and branching; the leaves are entire, oval, and downy underneath, the flowers are produced from the ends and ſides of the branches in ſmall cluſters; they appear in May, and are ſucceeded by berries, when ripe they are of a white colour.

[4]VACCINIUM *Vites Idæa.*

*Red Whortle-berry*] Hath very ſlender branching ſtalks, growing about ſix inches high, the leaves are ever-green, of a firm conſiſtence, oval, and ſmooth, and maculated on their under-ſide; the flowers grow in cluſters from the ends of the branches; they are of a reddiſh colour, and appear in May, and are ſucceeded by red juicy berries, which when ripe are much eſteemed for tarts.

[5]VACCINIUM *Oxycoccos.*

*Cranberry.*] Hath ſlender procumbent ſtalks, the leaves are ſmall, oval, entire, and reflexed on their edges; the flowers grow on long ſlender foot-ſtalks at the tops of the branches, are of a re' colour; appear in May and June, and are ſucceeded by berries, well known for tarts.

[6]VACCINIUM *Hiſpidulum.*

*Marſh Virginian Whortle-berry*] Hath trailing ſtalks, which are ſlender, rough, and imbricated; the leaves which turn backward are oval and entire; the flowers are produced from the tops of the branches on ſlender foot-ſtalks; they appear in May, and are ſucceeded by very large red berries.

The four firſt ſorts grow naturally in cold, light, ſandy woods, heaths, &c. To propagate them the roots ſhould be taken up from the places where they grow ſpontaneouſly, reſerving a quantity of mould to them, and planting them in a ſimilar ſoil and ſituation; in ſuch places they will thrive and encreaſe. The two laſt ſpecies require a boggy undiſturbed marſhy ſoil, to which the plants muſt be removed from where they naturally grow. The berries of moſt of the ſorts are noted for making excellent tarts, &c.

FEB
64

# INDEX

OF

# ENGLISH NAMES.


| *Engliſh,* | *Botanic Name.* |
|---|---|
| A | |
| ABELE, ſee Acacia | Populus |
| Acacia, falſe | Mimoſa |
| ——, German | Robinia |
| ——, three-thorned | Prunus |
| Acajou | Gleditiſtia |
| Aconite | Anacardium |
| ——, winter | Aconitum |
| Adam's apple | Helleborus |
| —— needle | Citrus |
| Adder's wort | Yucca |
| —— tongue | Polygonum |
| African marigold | Ophiogloſſum |
| Agnus caſtus | Tagetes |
| Agrimony | Vitex |
| ——, baſtard | Agrimonia |
| ——, hemp | Agrimonia |
| ——, baſtard hemp | Eupatorium |
| Alaternus | Ageratum |
| ——, baſtard | Rhamnus |
| Alder | Phylica |
| ——, berry-bearing | Betula |
| Alkekengi | Rhamnus |
| Aliſander | Phyſalis |
| All-ſpice, Carolina | Smyrnium |
| ——, Jamaica | Calycanthus |
| Almond | Myrtus |
| Aloe, American | Amygdalus |
| Althæa frutex | Agave |
| Amelanchior | Hibiſcus |
| Amomum Plinii | Meſpilus |
| Ananas | Solanum |
| Andrachne | Bromelia |
| Angelica tree | Arbutus |
| Apple, common | Aralia |
| | Pyrus |

| *Engliſh,* | *Botanic Name.* |
|---|---|
| Apple, cuſtard | Annona |
| ——, love | Solanum |
| ——, mad | Solanum |
| ——, male balſam | Momordica |
| ——, pine | Bromelia |
| Apricot | Prunus |
| Arbor vitæ | Thuya |
| Anotto | Bixa |
| Arrow-root | Maranta |
| Arſmart | Polygonum |
| Artichoke | Cynara |
| ——, Jeruſalem | Helianthus |
| Arum, African | Calla |
| Aſarabacca | Aſarum |
| Aſh | Fraxinus |
| —, mountain | Sorbus |
| —, poiſon | Rhus |
| Aſpen tree | Populus |
| Aſphodel | Aſphodelus |
| ——, marſh | Anthericum |
| ——, lily | Crinum |
| Atamaſco lily | Amaryllis |
| Avogato pear | Laurus |
| Auricula | Primula |
| Azarole | Cratægus |
| B. | |
| Balſam | Impatiens |
| —— Tolu | Toluifera |
| —— apple | Momordica |
| —— tree | Cluſia |
| —— tree | Piſtacia |
| Balſamine female | Impatiens |
| Banana | Muſa |
| Barley | Hordeum |
| Barren-wort | Epimedium |
| Baſe tree-treſoil | Cytiſus |

| *English,* | *Botanic Name.* |
|---|---|
| Basil | Ocymum |
| ——, American field | Monarda |
| Bastard acacia | Robinia |
| —— cedar tree | Theobroma |
| —— indigo | Amorpha |
| —— saffron | Carthamus |
| Batchelor's buttons | Lychnis |
| Baum | Melissa |
| —— of Gilead | Dracocephalon |
| —— of Gilead fir, | Pinus |
| —— Moldavian | Dracocephalon |
| —— Turky | Ditto |
| Bay | Laurus |
| —, Loblolly | Gordonia |
| —, rose | Nerium |
| —, dwarf rose | Rhododendrum |
| Bead tree | Melia |
| Bean | Vicia |
| ——, kidney | Phaseolus |
| —— tree, kidney | Glycine |
| ——, caper | Zygophillum |
| ——, trefoil, stinking | Anagyris |
| Bear berries | Arbutus |
| Bear's breech | Acanthus |
| —— ear | Primula auricula |
| —— ear, sanicle | Cortusa |
| —— foot | Helleborus |
| Beard Jupiter's | Anthyllis |
| ——, old man's | Clematis |
| Bee-flower, or orchis | Ophrys |
| — larkspur | Delphinium |
| Beech | Fagus |
| Beet | Beta |
| Belladonna lily | Amaryllis |
| Bell-flower | Campanula |
| Bells, Canterbury | Campanula |
| ——, hair | Hyacinthus |
| Bell-pepper | Capsicum |
| Belvidere | Chenopodium |
| Benjamin tree | Laurus |
| Bennet, herb | Geum |
| Berberry | Berberis |
| Bethlehem, star of | Ornithogalum |
| Betony | Betonica |
| ——, Paul's | Veronica |
| Bindweed | Convolvulus |
| ——, rough | Smilax |
| ——, black | Tamus |
| Birch | Betula |
| Bird cherry | Prunus |
| — pepper | Capsicum |
| Bird's eye | Adonis, |
| —— foot trefoil | Lotus |

| *English,* | *Botanic Name.* |
|---|---|
| Bird's nest | Ophrys |
| Birthwort | Aristolochia |
| Bistort | Polygonum |
| Bitter gourd | Cucumis |
| —— vetch | Orobus |
| Bitterwort | Gentiana |
| Blackberry | Rubus |
| Blackthorn | Prunus |
| Bladder nut | Staphylæa |
| ——, African | Royena |
| —— sena | Colutea |
| —— sena, jointed podded | Coronilla |
| Blite | Blitum |
| Blood flower | Hæmanthus |
| Blue bottle | Centaurea |
| Bonduc | Guilandina |
| Borecole | Brassica |
| Borage | Borago |
| Bottle flower | Centaurea |
| Box | Buxus |
| Boxthorn | Lycium |
| Bramble | Rubus |
| Brank ursine | Acanthus |
| Break-stone | Saxifraga |
| Briar, sweet | Rosa |
| — , wild | Rosa |
| Broccoli | Brassica |
| Broom | Spartium |
| ——, African | Aspalathus |
| ——, dyers | Genista |
| ——, dwarf | Genista |
| ——, butcher's | Ruscus |
| Bryony | Bryonia |
| ——, black | Tamus |
| Buckthorn | Rhamnus |
| ——, sea | Hippophae |
| Buck wheat | Polygonum |
| Bugle | Ajuga |
| Bugloss | Anchusa |
| Bullace | Prunus |
| Burnet, garden | Poterium |
| ——, saxafrage | Pimpinella |
| Butchers broom | Ruscus |
| Butter-flower | Ranunculus |
| Button-wood | Cephalanthus |

C.

| | |
|---|---|
| Cabbage | Brassica |
| ——, turnep | Brassica |
| ——, sea | Crambe |
| —— tree | Cacalia |
| Calabash | Cucurbita |
| —— tree | Crescentia |

| *Engliſh,* | *Botanic Name.* |
|---|---|
| Calamint | Meliſſa |
| ———, water | Mentha |
| Calves ſnout | Antirrhinum |
| Campeachy wood | Hæmatoxylon |
| Camphire tree | Laurus |
| Campion | Agroſtema |
| ——— | Lychnis |
| ———, viſcous | Silene |
| Candleberry myrtle | Myrica |
| Candy lion's foot | Catananche |
| —— tuft | Iberis |
| Cane, or reed | Arundo |
| ——, ſugar | Saccharum |
| Canterbury bells | Campanula |
| Caper, buſh | Capparis |
| ——, bean | Zygophyllum |
| Caragana | Robinia |
| Caraway | Carum |
| Cardinal flower | Lobelia |
| Carline thiſtle | Carduus |
| Carnation | Dianthus |
| ———, Spaniſh | Poinciana |
| ——— tree | Cacalia |
| Carob tree | Ceratonia |
| Carrot | Daucus |
| Caſhew nut | Anacardium |
| Caſſava | Jatropha |
| Caſſidony | Gnaphalium |
| Caſſioberry buſh | Caſſine |
| Catalpa | Bignonia |
| Catch fly, lobel's | Silene |
| ———, German | Lychnis |
| Catmint | Nepeta |
| Cat's foot, mountain | Gnaphalium |
| Caterpillar plant | Scorpiurus |
| Cauliflower | Braſſica |
| Cedar | Juniperus |
| ——, baſtard | Theobroma |
| ——, white | Cupreſſus |
| —— of Libanus | Pinus |
| Celandine | Cheledonium |
| ———, leſſer | Ranunculus |
| ——— tree | Bocconia |
| Celery | Apium |
| Centaury, leſſer | Gentiana |
| Cereus | Cactus |
| Chamomile | Anthemis |
| Chardoon | Cynara |
| Chaſte tree | Vitex |
| Cherry, common | Prunus |
| ———, Barbadoes | Malpighia |
| ———, bird | Prunus |
| ———, cornelian | Cornus |

| *Engliſh,* | *Botanic Name.* |
|---|---|
| Cherry, dwarf | Lonicera |
| ———, Hottentot | Caſſine |
| ———, winter | Solanum |
| ———, winter | Phyſalis |
| ———, laurel | Prunus |
| ———, plum | Prunus |
| Chervil | Scandix |
| Cheſnut tree | Fagus |
| ———, horſe | Æſculus |
| China root | Smilax |
| —— roſe | Hibiſcus |
| Chocolate nut | Theobroma |
| Chriſtmas roſe | Helleborus |
| Chriſtopher herb | Actæa |
| Chriſt's thorn | Rhamnus |
| Chryſanthemum, hard-ſeeded | Oſteoſpermum |
| Cicely, ſweet | Scandix |
| Cinnamon tree | Laurus |
| Cinquefoil | Potentilla |
| ———, ſhrubby | Potentilla |
| Citron tree | Citrus |
| Citrul | Cucurbita |
| Cives | Allium |
| Clary | Salvia |
| Climber | Clematis |
| Cloud berry | Rubus |
| Clove July flower | Dianthus |
| Clover | Trifolium |
| Cob nut | Corylus |
| Cock's comb | Celoſia |
| —— ſpur thorn | Cratægus |
| Cocoa nut | Cocos |
| Codlin tree | Pyrus |
| Coffee tree | Coffea |
| Cole ſeed | Braſſica |
| —— rape | Braſſica |
| —— wort | Braſſica |
| —— wort, ſea | Crambe |
| Coltsfoot | Tuſſilago |
| ———, foreign | Cacalia |
| Columbine | Aquilegia |
| ———, feathered | Thalictrum |
| Colutea, jointed-podded | Coromilla |
| Comfrey | Symphytum |
| Conval lily | Convallaria |
| Coral tree | Erythrina |
| Cork tree | Quercus |
| Corn, Indian | Zea |
| —— flag | Gladiolus |
| —— marigold | Chryſanthemum |
| —— roſe | Papaver |
| —— ſallad | Valeriana |

| *Engliſh,* | *Botanic Name.* |
|---|---|
| Corn bottle | Centaurea |
| Cornel tree | Cornus |
| Cornelian cherry | Cornus |
| Coſtmary | Tanacetum |
| Cotton | Goſſypium |
| ——, lavender | Santolina |
| —— tree, ſilk | Bombax |
| Coventry bells | Campanula |
| Cowl, friars | Arum |
| Cowſlip | Primula |
| ———, American | Dodecatheon |
| Crab tree | Pyrus |
| Cranberry | Vaccinium |
| Crane's bill | Geranium |
| Creeper, Virginian | Hedera |
| Creſs, garden | Lepidium |
| ——, water | Siſymbrium |
| ——, Indian | Tropæolum |
| Croſs, Knights | Lychnis |
| ——, ſcarlet | Lychnis |
| Crowfoot | Ranunculus |
| Crown, imperial | Fritilaria |
| Cuckow flower | Cardamine |
| ——— pint | Arum |
| Cucumber | Cucumis |
| ———, ſpiriting | Momordica |
| Cudweed | Gnaphalium |
| Currant tree | Ribes |
| Cuſhion, ladies | Saxifraga |
| Cuſtard apple | Annona |
| Cypreſs tree | Cupreſſus |
| **D.** | |
| Daffodil | Narciſſus |
| ——— lily | Amaryllis |
| ——— | Pancratium |
| Daffodil, ſea | Pancratium |
| Dahoon holly | Ilex |
| Daiſy | Bellis |
| ——, ox-eye | Cryſanthemum |
| ——, blue | Globularia |
| Dames violet | Heſperis |
| Damſon tree | Prunus |
| Date plum, Indian | Dioſpyros |
| —— tree | Phœnix |
| Day lily | Hemerocallis |
| Deadly nightſhade | Atropha |
| Devil in a buſh | Nigella |
| Devil's bit | Scabioſa |
| Dewberry buſh | Rubus |
| Dill | Anethum |
| Diſtaff thiſtle | Carthamus |
| Dittander | Lepidium |
| Dittany, | Origanum |

| *Engliſh,* | *Botanic Name.* |
|---|---|
| Dittany, white | Dictamnus |
| Dog's bane | Aſclepias |
| —— bane | Apocynum |
| —— berry | Cornus |
| —— ſtones | Orchis |
| —— tooth violet | Erythronium |
| —— roſe | Roſa |
| Dog wood | Cornus |
| ——— of Jamaica | Erythrina |
| Dragon | Dracontium |
| ——— | Arum |
| Dragon's head | Dracocephalum |
| ——— water | Calla |
| Dropwort | Spirea |
| Dyer's broom | Geniſta |
| ——— weed | Geniſta |
| **E.** | |
| Ebony | Ebenus |
| ———, mountain | Bauhinia |
| Egg plant | Solanum |
| Eglantine | Roſa |
| Elder | Sambucus |
| ——, marſh | Viburnum |
| Elemi tree, gum | Piſtachia |
| Elephant's foot | Elephantopus |
| Elm tree | Ulmus |
| Endive | Cichorium |
| Eſchalot | Allium |
| Eternal flower | Xeranthemum |
| ——— | Gnaphalium |
| ——— | Gomphrena |
| Everlaſting | Xeranthemum |
| **F.** | |
| Farting tree | Hura |
| Felwort | Gentiana |
| Feather, princeſs's | Amaranthus |
| Feathered columbine | Thalictrum |
| Fennel | Anethum |
| ———, ſea | Crithmum |
| ——— flower | Nigella |
| ———, giant | Ferula |
| Feverfew | Matricaria |
| Fever weed | Eryngium |
| Ficoides | Meſembryanthemum |
| Field baſil, American | Monarda |
| ———, Syrian | Ziziphora |
| Fig | Ficus |
| —, Indian | Cactus |
| — marigold | Meſembryanthemum |
| Filbert | Corylus |
| | Finochia |

# INDEX.


| *Engliſh,* | *Botanic Name.* |
|---|---|
| Finochia | Anethum |
| Fir tree | Pinus |
| Flag flower | Iris |
| —— corn | Gladiolus |
| ——, ſweet-ſcented | Acorus |
| Flax | Linum |
| ——, toad | Antirrhinum |
| Flea bane | Conyza |
| Flea bane, ſhrubby African | Tarchonanthes |
| Flower de luce | Iris |
| ——-, gentle | Amaranthus |
| ——- of an hour | Hibiſcus |
| ——- Fence | Poinciana |
| Fluellin | Antirrhinum |
| Fly trap, Venus | Dionæa |
| —- honeſuckle | Lonicera |
| —- honeyſuckle, African | Halleria |
| —- bane | Silene |
| Fool's ſtones | Orchis |
| Four o'clock flower | Mirabilis |
| Fox glove | Digitalis |
| Frankincenſe, Jews | Styrax |
| ——— tree | Pinus |
| Fraxinella | Dictamnus |
| French bean | Phaſeolus |
| ——- honeyſuckle | Hedyſarum |
| ——- marigold | Tagetes |
| ——- willow | Epilobium |
| Friar's cowl | Arum |
| Fringe tree | Chionanthus |
| Fritillara craſſa | Stapelia |
| Fumatory | Fumaria |
| Furze | Ulex |

G.

| | |
|---|---|
| Gale or ſweet gale | Myrica |
| Garlic | Allium |
| Gelder roſe | Viburnum |
| ——-——, currant-leaved | Spiræa |
| ——-——, Virginian | Spiræa |
| Gentian | Gentiana |
| Gentianella | Gentiana |
| Gentle flower | Amaranthus |
| Germander | Teucrium |
| ———, water | Teucrium |
| ———, rock | Veronica |
| Gilead, falſe balm of | Dracocephalum |
| Giant fennel | Ferula |
| Ginger | Amomum |
| Glaſtonbury thorn | Cratægus |
| Globe amaranth | Gomphrena |
| ——- daiſy | Globularia |
| ——- ranunculus | Trollius |
| Goat's beard | Tragopogon |
| ——- thorn | Aſtragalus |
| Gold of pleaſure | Myagrum |
| Golden cups | Ranunculus |
| ——— lungwort | Hieracium |
| ——— mouſe ear | Hieracium |
| ——— rod | Solidago |
| ——— ſaxifrage | Chryſoplenium |
| Goldy locks | Chryſocoma |
| ——-——- | Gnaphalium |
| Good Henry | Chenopodium |
| Gooſeberry | Ribes |
| Gorſe | Ulex |
| Gourd | Cucurbita |
| ——-, bitter | Cucumis |
| ——- tree, Indian | Creſcentia |
| Grace, herb of | Ruta |
| Grain, ſcarlet | Quercus |
| Grape | Vitis |
| ——-, ſea-ſide | Coccoloba |
| ——-, hyacinth | Hyacinthus |
| Greek valerian | Polemonium |
| Groundſel | Senecio |
| Groundſel tree | Baccharis |
| Guava | Piſidium |
| ——-, French | Caſſia |
| Gum tragacanth | Aſtragalus |
| ——, ſweet | Liquidambar |

H.

| | |
|---|---|
| Hair bells | Hyacinthus |
| Hare's ear | Bupleurum |
| Hardwick's ſhrub lady | Meſpilus |
| Hartwort, ſhrubby | Bupleurum |
| Hatchet vetch | Coronilla |
| Hawkweed | Hieracium |
| Hawthorn, or haw | Cratægus |
| Haw, black American | Viburnum |
| Hazel | Corylus |
| Hazel, witch | Hamamelis |
| Heart's eaſe | Viola |
| Heath | Erica |
| ——-, African | Phylica |
| ——-, mountain | Saxifraga |
| Hedge-hog trefoil | Medicago |
| ——-——- thiſtle | Cactus |
| Hellebore | Helleborus |
| ——-—, white | Veratrum |
| Hemp | Cannabis |
| —— agrimony | Eupatorium |
| ———-—- ,naked-headed | Verbeſena |
| Henbane, yellow | Nicotiana |
| Hepatica | Anemonie |
| Hep tree | Roſa |
| Herb bennet | Geum |

| *Engliſh,* | *Botanic Name.* |
|---|---|
| Herb Chriſtopher | Actæa |
| ——, willow | Epilobium |
| ——————— | Lythrum |
| ——————— | Lyſimachia |
| Hercules' club | Zanthoxylon |
| Hickery | Juglans |
| Hind berry | Rubus |
| Hollow root | Adoxa |
| Holly | Ilex |
| ——, knee | Ruſcus |
| ——, ſea | Eryngium |
| Hollyhock | Alcea |
| Honeſty | Lunaria |
| Honey flower | Melianthus |
| —— locuſt | Gleditſia |
| Honeyſuckle | Lonicera |
| ———————, African fly | Halleria |
| ———————, American upright | Azalea |
| ———————, French | Hedyſarum |
| ———————, graſs | Triſolium |
| Honeywort | Cerinthe |
| Hop | Humulus |
| Hornbeam | Carpinus |
| Hornpoppy | Chelidonium |
| Horns | Medicago |
| Horſe cheſnut | Æſculus |
| —— radiſh | Cochlearia |
| —— tail, ſhrubby | Ephedra |
| Hottentot cherry | Caſſine |
| Houſe leek | Sempervivum |
| ———————, leſſer | Sedum |
| Humble plant | Mimoſa |
| Hyacinth | Hyacinthus |
| ———————, African blue | Crinum |
| ———————, Peruvian | Scilla |
| ———————, lily | Scilla |
| ———————, ſtarry | Scilla |
| Hyſſop | Hyſſopus |
| ———————, mountain | Thymbra |

I.

| | |
|---|---|
| Ice plant | Meſembryanthemum |
| Immortal eagle flower | Impatiens |
| ———————— flower | Gomphrena |
| Indian corn | Zea |
| ——— creſs | Tropæolum |
| ——— fig | Cactus |
| ——— god tree | Ficus |
| ——— ſhot | Canna |
| ——— pepper | Capſicum |
| Indigo | Indigofera |
| ———, baſtard | Amorpha |

| *Engliſh,* | *Botanic Name.* |
|---|---|
| Ipecacuana, falſe | Aſclepias |
| Iris uvaria | Aloe |
| Iron wood | Sideroxylon |
| Ivy | Hedera |

J.

| | |
|---|---|
| Jacinth | Hyacinthus |
| Jack in a box | Hernandia |
| Jacob's ladder | Polemonium |
| Jacobæa lily | Amaryllis |
| Jalap | Mirabilis |
| Jaſmine | Jaſminum |
| ———, Arabian | Nyctanthes |
| ———, baſtard | Ceſtrum |
| ———, cape | Gardenia |
| ———, ilex-leaved | Lantana |
| ———, fennel-leaved | Ipomæa |
| ———, Perſian | Syringa |
| ———, red | Plumeria |
| ———, ſcarlet | Bignonia |
| ———, yellow | Bignonia |
| Jericho, roſe of | Anaſtatica |
| Jerſey tea, new | Ceanothus |
| Jeruſalem artichoke | Helianthus |
| ———— cowſlip | Pulmonaria |
| ———— croſs | Lychnis |
| ———— oak | Chenopodium |
| ———— ſage | Phlomis |
| Jews frankincenſe | Styrax |
| John's wort, ſaint | Hypericum |
| Jonquil | Narciſſus |
| Judas tree | Cercis |
| July flower | Dianthus |
| ———— queen's | Heſperis |
| ———— ſtock | Cheiranthus |
| Juniper tree | Juniperus |
| Jupiter's beard | Anthyllis |

K.

| | |
|---|---|
| Kale | Braſſica |
| ——, ſea | Crambe |
| Kali | Salſola |
| Kermes | Quercus |
| Ketmia bladder | Hibiſcus |
| Kidney bean | Phaſeolus |
| ———————, Carolina | Glycine |
| Kidney vetch | Anthillis |
| Kidney wort | Saxifraga |
| King's ſpear | Aſphodelus |
| Knapweed | Centaurea |
| Knee holly | Ruſcus |
| Knot graſs | Polygonum |

L.

| | |
|---|---|
| Laburnum | Cytiſus |
| Lac tree | Rhus |




Ladder,

# INDEX.


| *Engliſh,* | *Botanic Name.* |
|---|---|
| Ladder, Jacob's | Polemonium |
| Lady's bed ſtraw | Gallium |
| —— bower | Clematis |
| —— cuſhion | Saxifraga |
| —— finger | Anthyllis |
| —— mantle | Alchemilla |
| —— ſeal | Tamus |
| —— ſmock | Cardamine |
| —— traces | Ophrys |
| Lamb's lettuce | Valeriana |
| Larch tree | Pinus |
| Larkſpur | Delphinium |
| Lavender | Lavandula |
| ——, ſea | Statice |
| ——, cotton | Stantolina |
| Laurel | Prunus |
| ——, Alexandrian | Ruſcus |
| ——, ſea-ſide | Phyllanthus |
| ——, flax-leaved | Daphne |
| ——, dwarf American | Kalmia |
| ——, ſpurge | Daphne |
| Lauruſtinus | Viburnum |
| Leadwort | Plumbago |
| Lebanon, cedar | Pinus |
| Leek | Allium |
| Lemon | Citrus |
| ——, water | Paſſiflora |
| Lentiſk | Piſtachia |
| Leopard's bane | Doronicum |
| Lettuce | Lactuce |
| ——, lamb's | Valeriana |
| Life, tree of | Thuya |
| ——, wood of | Guaiacum |
| ——, everlaſting | Gnaphalium |
| Lignum aloes | Cordia |
| Lignum vitæ | Guaiacum |
| Lilac | Syringa |
| Lily | Lilium |
| ——, African ſcarlet | Amaryllis |
| ——, aſphodel | Crinum |
| ——, atamaſco | Amaryllis |
| ——, belladona | Amaryllis |
| ——, St. Bruus's | Hemerocallis |
| ——, conval | Convallaria |
| ——, day | Hemerocallis |
| ——, Guernſey | Amaryllis |
| ——, Jacobæa | Ditto |
| ——, Japan | Ditto |
| ——, Mexican | Ditto |
| ——, Perſian | Fritillaria |
| ——, ſuperb | Glorioſa |
| ——, water | Nymphæa |
| ——, water, leſſer | Menyanthes |

| *Engliſh,* | *Botanic Name.* |
|---|---|
| Lily, Zeylon | Amaryllis |
| ——, aſphodel | Hemerocallis |
| ——, daffodil | Amaryllis |
| —————— | Pancratium |
| ——, hyacinth | Scilla |
| ——, of the valley | Convallaria |
| Lime | Citrus |
| Lime, brook | Veronica |
| Lime tree | Tilia |
| Linden | Tilia |
| Lion's foot | Catananche |
| —— tail | Leonurus |
| Liquidamber | Liquidambar |
| Liquorice | Glychyrrhiza |
| ——————, wild | Aſtragalus |
| —————— | Glycine |
| ——————, vetch | Aſtralagus |
| ——————, vetch knob-bed-rooted | Glycine |
| Liver ever | Sedum |
| Liverwort | Lichen |
| ——————, noble | Anemone |
| Locuſt tree | Robinia |
| ——————, honey | Gleditſia |
| Logwood tree | Hæmotoxylon |
| London pride | Saxifraga |
| Looſe ſtrife | Lyſimachia |
| ——————, podded | Epilobium |
| ——————, purple | Lythrum |
| ——————, ſpiked | Lythrum |
| Lords and ladies | Arum |
| Lote tree | Celtis |
| Lotus, honey | Trifolium |
| Lovage | Liguſticum |
| Love apple | Solanum |
| Love lies a-bleeding | Amaranthus |
| Lucern | Medicago |
| Lungwort | Pulmonaria |
| ——————, cow's | Verbaſcum |
| Lupine | Lupinus |
| Lychnidea | Phlox |
| Lychnis, baſtard | Phlox |
| ——————, wild | Agroſtemma |
| ——————, dwarf | Silene |

M.

| | |
|---|---|
| Mad apple | Solanum |
| Madder | Rubia |
| Madwort | Alyſſum |
| Mahaleb | Prunus |
| Maho tree | Hibiſcus |
| Maiden hair | Adiantum |
| —— plum | Chryſobalanus |
| Maiz | Zea |

| *Engliſh,* | *Botanic Name.* |
|---|---|
| Malabar nut | Juſticia |
| Male balſam apple | Momordica |
| Mallow | Malva |
| ———, marſh | Althæa |
| ———, roſe | Alcea |
| ———, Syrian | Hibiſcus |
| ———, tree | Lavatera |
| ———, Venetian | ——— |
| ———, vervain | Malva |
| Mandrake | Mandragora |
| Manihot | Jatropha |
| Maple | Acer |
| Marigold | Calendula |
| ———, African | Tagetes |
| ———, French | Tagetes |
| ———, corn | Chryſanthemum |
| ———, fig | Meſembryanthemum |
| ———, marſh | Caltha |
| Marjoram, ſweet | Origanum |
| ———, baſtard | ——— |
| ———, pot | ——— |
| ———, Spaniſh | Urtica |
| ———, wild | Origanum |
| Martagon | Lilium |
| Marvel of Peru | Mirabilis |
| Marum, Syrian | Origanum |
| Maſterwort | Imperatoria |
| Maſtic thyme | Thymus |
| ——— herb | Satureia |
| ——— tree | Piſtachia |
| ——— tree, Indian | Schinus |
| Maudlin | Achillea |
| Maw ſeed | Papaver |
| May apple | Podophyllum |
| ——— buſh | Cratægus |
| ——— lily | Convallaria |
| ——— weed | Anthemis |
| Medea | Dodecatheon |
| Meadow roſe | Thalictrum |
| ——— ſaffron | Colchicum |
| ——— ſweet | Spiræa |
| ———, queen of | ——— |
| Mealy tree | Viburnum |
| Medic | Medicago |
| ——— vetch | Hedyſarum |
| Medlar tree | Meſpilus |
| Meduſa's head | Euphorbia |
| Melancholy thiſtle | Carduus |
| ——— tree | Nyctanthes |
| Melilot | Trifolium |
| Melon | Cucumis |
| ———, water | Cucurbita |
| ——— thiſtle | Cactus |
| Mezereon | Daphne |
| Mignonette | Reſeda |
| Milfoil | Achillea |
| Milk vetch | Aſtragalus |
| ——— wood | Bignonia |
| ——— wort | Polygala |
| ——— | Euphorbia |
| Millet | Panicum |
| Mint | Mentha |
| Miſletoe | Viſcum |
| Mock orange | Philadelphus |
| ——— privet | Phillyrea |
| Moldavian baum | Dracocephalon |
| Molucca baum | Moluccella |
| Moly | Allium |
| Moneywort | Lyſimachia |
| Monk's hood | Aconitum |
| ——— rhubarb | Rumex |
| Moon ſeed | Meniſpermum |
| ——— trefoil | Medicago |
| ——— wort | Lunaria |
| Moor berry | Vaccinium |
| Moſs | Lichen |
| ——— berries | Vaccinium |
| Moth mullein | Verbaſcum |
| Mother of thyme | Thymus |
| Motherwort | Leonurus |
| Mountain aſh | Sorbus |
| Mouſe ear | Hieracium |
| ——— tail | Myoſurus |
| Mugwort | Artemiſia |
| Mulberry tree | Morus |
| ——— blite | Blitum |
| Mule, Fairchild's | Dianthus |
| Mullein | Verbaſcum |
| Muſhroom | Agaricus |
| Muſk | Hibiſcus |
| Muſtard | Sinapis |
| ——— hedge | Eryſimum |
| ——— mithridate | Thlaſpia |
| Myrtle tree | Myrtus |
| ——— candleberry | Myrica |
| **N.** | |
| Naked ladies | Colchicum |
| Naples, ſtar of | Ornithogalum |
| Narciſſus, autumnal | Amaryllis |
| Naſturtium | Tropæolum |
| Navelwort | Cotyledon |
| ——— baſtard | Craſſula |
| ——— Venus's | Cynogloſſum |
| Navew | Braſſica |
| Nectarine | Amygdalus |
| Needle, Adam's | Yucca |

| *English,* | *Botanic Name.* |
|---|---|
| Nettle | Urtica |
| ——, dead | Lamium |
| ——, hedge | Galeopſis |
| ——, tree | Celtis |
| Nickar tree | Guilandia |
| Nightſhade | Solanum |
| ———, deadly | Atropa |
| ———, enchanter's | Circæa |
| Noli me tangere | Impatiens |
| None ſo pretty | Saxifraga |
| None ſuch | Lychnis |
| Noſe bleed | Achillæa |
| Nut tree | Corylus |
| ——, bladder | Staphylæa |
| ——, caſhew | Anacardium |
| ——, chocolate | Theobroma |
| ——, cob | Corylus |
| ——, cocoa | Cocos |
| ——, hazel | Corylus |
| ——, Malabar | Juſticia |
| ——, phyſic | Jatropha |
| ——, piſtacia | Piſtacia |
| ——, purging | Crotan |
| ——, wall | Juglans |
| O. | |
| Oak tree | Quercus |
| ———, evergreen | Quercus |
| ———, dwarf | Tenerium |
| ———, Jeruſalem | Chenopodium |
| ———, poiſon | Rhus |
| Oil nut | Ricinus |
| Old man's beard | Clematis |
| ——— head | Dianthus |
| Oleander | Nerium |
| Oleaſter | Elæagnus |
| Olive | Olea |
| —— ſpurge | Daphne |
| —— wild | Elæagnus |
| Onion | Allium |
| ——- ſea | Scilla |
| Orange tree | Citrus |
| ———, mock | Philadelphus |
| Origany | Origanum |
| Orpine | Craſſula |
| ———, true | Telephium |
| Orrach | Atriplex |
| ——-, berry bearing | Blitum |
| ——-, wild | Chenopodium |
| Oſier | Salix |
| Ox eye | Bupthalmum |
| ——— daiſy | Chryſanthemum |
| Ox lips | Primula |
| Oſwego tea | Monarda |

| *English,* | *Botanic Name.* |
|---|---|
| P. | |
| Pæony | Pæonia |
| Painted ladies | Dianthus |
| ———— peas | Lathyrus |
| Palm tree | Phœnix |
| ———, leſſer | Chamærops |
| Palmetto | Chamærops |
| Panſies | Viola |
| Papaw | Carica |
| ——-, North American | Annona |
| Park leaves | Hypericum |
| Parſley | Apium |
| ——-, Macedonian | Bubon |
| ——-, ſtone | Bubon |
| ——-, Scottiſh ſea | Liguſticum |
| Parſnep | Paſtinaca |
| ——— water | Sium |
| Paſque flower | Anemone |
| Paſſion flower | Paſſiflora |
| Paul's betony | Veronica |
| Pea | Piſum |
| ——, chick | Cicer |
| ——, chickling | Lathyrus |
| ——, everlaſting | Lathyrus |
| ——, heath | Orobis |
| ——, painted lady | Lathyrus |
| ——, pigeon | Cytiſus |
| ——, ſweet-ſcented | Lathyrus |
| ——, Tangier | Lathyrus |
| ——, winged | Lotus |
| Peach | Amygdalus |
| ——, wolf's | Solanum |
| Pear tree | Pyrus |
| —— avocado | Laurus |
| —— prickly | Cactus |
| Pellitory | Parietaria |
| ——— of Spain | Anthemis |
| ——— tree | Zanthoxylum |
| Penguin | Bromelia |
| Pennyroyal | Mentha |
| Pepper tree | Piper |
| ——-, bell | Capſicum |
| ——-, bird | Capſicum |
| ——-, Guinea | Capſicum |
| ——-, Indian | Capſicum |
| ——-, wall | Sedum |
| ——-, water | Polygonum |
| ——-, tree | Vitis |
| ——- wort | Lepidium |
| Periwinkle | Vinca |
| Perſicaria | Polygonum |
| Perſimon plum | Dioſpyros |
| Pheaſant's eye | Adonis |

| *Engliſh,* | *Botanic Name.* |
|---|---|
| Phillyrea, falſe | Rhamnus |
| Phu | Valeriana |
| Phyſic nut | Jatropha |
| Pilewort | Ranunculus |
| Pimento | Myrtus |
| Pimpernel | Anagallis |
| ———, water | Veronica |
| Pinaſter | Pinus |
| Pine tree | Pinus |
| ——, ground | Teucrium |
| —— apple | Bromelia |
| Pink | Dianthus |
| ——, Indian | Dianthus |
| ——, ſea | Statice |
| Pipe tree | Syringa |
| Piperidge buſh | Berberis |
| Pippin | Pyrus |
| Piquettes | Dianthus |
| Piſhamin plum | Dioſpyros |
| Pitch tree | Pinus |
| Plane tree | Platanus |
| ———, falſe | Acer |
| Plant, burning thorny | Euphorbia |
| Plant, egg | Solanum |
| ——, humble | Mimoſa |
| ——. ſenſitive | Mimoſa |
| —— ———, baſtard | Œſchynomene |
| Plantain | Plantago |
| ———, buck's-horn | Plantago |
| —— ſhot | Canna |
| —— tree | Muſa |
| Pliant mealy tree | Viburnum |
| Plowman's ſpikenard | Baccharis |
| Plum tree | Prunus |
| ——, American black | Chryſobalanus |
| ——, bay | Piſidium |
| ——, Indian date | Dioſpyros |
| Poet's caſſia | Oſyris |
| Poiſon tree | Rhus |
| —— aſh | Ditto |
| —— oak | Ditto |
| —— wood | Ditto |
| —— buſh | Euphorbia |
| Poley, mountain | Tenerium |
| Pomegranate | Punica |
| Pompion | Cucurbita |
| Poplar | Populus |
| Poppy | Papaver |
| ——, horned | Chelidonium |
| ——, ſpatling | Cucubalus |
| Potatoe | Solanum |
| Prick madam | Sedum |
| Prick wood | Euonymus |

| *Engliſh,* | *Botanic Name.* |
|---|---|
| Primroſe | Primula |
| ———, night | Oenothera |
| ——, peerleſs | Narciſſus |
| ———, tree | Oenothera |
| Prince's feather | Amaranthus |
| Privet | Liguſtrum |
| ——, evergreen | Rhamnus |
| ——, mock | Phillyrea |
| Pudding graſs | Mentha |
| —— pipe tree | Caſſia |
| Pumpion | Cucurbita |
| Purging nut | Croton |
| —— nut | Jatropha |
| —— thorn | Rhamnus |
| Purple apple | Annona |
| Purſlane | Portulaca |
| ———, ſea | Atriplex |
| —— tree, ſea | Atriplex |
| **Q.** | |
| Quamoclit | Ipomæa |
| Queen of the meadows | Spiræa |
| ——'s July flower | Heſperis |
| —— violet | Heſperis |
| Quick | Cratægus |
| Quicken tree | Sorbus |
| Quickenbeam | Sorbus |
| Quince | Pyrus |
| ——, baſtard | Meſpilus |
| **R.** | |
| Radiſh | Raphanus |
| ——, horſe | Cochlearia |
| ——, water | Siſymbrium |
| Ragged robin | Lychnis |
| Ragwort | Senecio |
| ———, African | Othonna |
| Rampion | Campanula |
| Ranunculus, globe | Trollius |
| Rape | Braſſica |
| Raſpberry | Rubus |
| Rattle-ſnake root | Polygala |
| Red bud | Cercis |
| Red whorts | Arbutus |
| Reed | Arundo |
| ——, Indian flowering | Canna |
| Reſt harrow | Ononis |
| Rhamnus, baſtard | Hippophae |
| Rhubarb | Rheum |
| ———, monk's | Rumex |
| Ricinus, baſtard | Croton |
| Roane tree | Sorbus |
| Robert, herb | Geranium |
| Rocambole | Allium |
| Rock germander | Veronica |


Rock

# INDEX.


| *Engliſh,* | *Botanic Name.* |
|---|---|
| Rock roſe | Ciſtus |
| Rocket | Braſſica |
| ——-, baſtard | Reſeda |
| ——-, marſh | Siſymbrium |
| ——-, dame's violet | Heſperis |
| Rod, golden | Solidago |
| Root, China | Smilax |
| ——, hollow | Adoxa |
| ——, roſe | Rhodiola |
| ——, ſnake | Ariſtolochia |
| ——, rattle ſnake | Polygala |
| ——, ſweet | Glycirrhiza |
| Roſe | Roſa |
| ——, China | Hibiſcus |
| ——, Chriſtmas | Helleborus |
| ——, corn | Papaver |
| ——, gelder | Viburnum |
| ——, Virginian gelder | Spiræa |
| ——, Martinico | Hibiſcus |
| ——, rock | Ciſtus |
| ——, of Jericho | Anaſtatica |
| ——, bay | Nerium |
| ——, bay dwarf | Rhododendron |
| ——, mallow | Alcea |
| —— root | Rhodiola |
| Roſemary | Roſmarinus |
| Rue | Ruta |
| ——, meadow | Thalictrum |
| ——, wall | Aſplenium |
| Ruſh | Juncus |
| ——, ſweet | Acorus |

S.

| | |
|---|---|
| Safflower | Carthamus |
| Saffron | Crocus |
| ——, baſtard | Carthamus |
| ——, meadow | Colchicum |
| Sage | Salvia |
| ——, wild | Teucrium |
| ——, Indian | Lantana |
| ——, Jeruſalem | Pulmonaria |
| ——, Jeruſalem | Phlomis |
| —— tree | Phlomis |
| St. Bruno's lily | Hemerocallis |
| St. John's wort | Hypericum |
| St. Peter's wort | Aſcyrum |
| ———— | Hypericum |
| ———— ſhrubby | Lonicera |
| Saintfoin | Hedyſarum |
| Sallad, corn | Valeriana |
| Sallow tree | Salix |
| Salſafy | Tragopogon |
| Samphire | Crithmum |
| ——, golden | Inula |

| *Engliſh,* | *Botanic Name.* |
|---|---|
| Sand box tree | Hura |
| Sanicle | Saxifraga |
| ——, bear's ear | Cortuſa |
| Sapota | Achras |
| Sarſaparilla | Smilax |
| Saſſafras | Laurus |
| Sattin flower | Lunaria |
| Savin | Juniperus |
| Savory | Satureia |
| Savoy | Braſſica |
| Saw wort | Serratula |
| Saxifrage | Saxifraga |
| ——, burnet | Pimpinella |
| ——, golden | Chryſoſplonium |
| Scabious | Scabioſa |
| Scallion | Allium |
| Scammony | Convolvulus |
| Sciatica creſs | Iberis |
| Scorpion graſs | Scorpiurus |
| —— ſenna | Coronilla |
| Scotch kale | Braſſica |
| Scurvy graſs | Cochlearia |
| Sea cabbage | Crambe |
| —— daffodil | Pancratium |
| —— holly | Eryngium |
| —— lavender | Statice |
| —— purſlain tree | Atriplex |
| —— ſide grape | Coccoloba |
| Sebeſten | Cordea |
| Sedum | Sempervivum |
| Self-heal | Sanicula |
| Sena, ſcorpion | Coronilla |
| —— of the ſhops | Caſſia |
| ——, bladder | Colutea |
| Senega root | Polygala |
| Sengreen | Sempervivum |
| Senſitive plant | Mimoſa |
| Service tree | Sorbus |
| ———-, maple-leaved | Cratægus |
| ———-, wild | Cratægus |
| Shaddock | Citrus |
| Shallot | Allium |
| Shot, Indian | Canna |
| Side ſaddle plant | Sarracena |
| Silk cotton tree | Bombax |
| ——, Virginian | Periploca |
| Silver buſh | Anthyllis |
| —— tree | Protea |
| Simpler's joy | Verbena |
| Skirret | Sium |
| Sloe tree | Prunus |
| Smallage | Apium |
| Snails | Medicago |

# INDEX.


| *Engliſh,* | *Botanic Name.* |
|---|---|
| Snakeweed | Polygonum |
| —— root | Ariſtolochia |
| Snapdragon | Antirrhinum |
| Sneezewort | Achillea |
| Snow ball tree | Viburnum |
| Snow-drop | Galanthus |
| —— —— tree | Cheonanthus |
| Soapwort | Saponaria |
| Solomon's ſeal | Convallaria |
| Sorrel | Rumex |
| ——, wood | Oxalis |
| Sour ſop | Annona |
| Southernwood | Artemiſia |
| South-ſea tea | Caſſine |
| Sow bread | Cyclamen |
| Sparrow wort | Paſſerina |
| Spatling poppy | Cucubalus |
| Speedwell | Veronica |
| Spice wood | Laurus |
| ——, all | Myrtus |
| Spider wort | Hæmerocallis |
| ——, Virginian | Tradeſcantia |
| Spikenard | Baccharis |
| Spinach | Spinachia |
| ——, ſtrawberry | Blitum |
| Spindle tree | Euonymus |
| ——, climbing | Celaſtrus |
| Spiræa frutex | Spiræa |
| ——, African | Dioſma |
| Spitting cucumber | Momordica |
| Spleen wort | Aſplenium |
| Spoon wort | Cochlearia |
| Spurge | Euphorbia |
| ——, laurel | Daphne |
| Squaſh | Cucurbita |
| Squill | Scilla |
| Staff tree | Celaſtrus |
| Stag's horn tree | Rhus |
| Star apple | Chryſophyllum |
| —— of Bethlehem | Ornithogalum |
| —— hyacinth | Scilla |
| —— thiſtle | Centaurea |
| —— wort | Aſter |
| Staves acre | Delphinium |
| Stock July flower | Cheiranthus |
| ——, dwarf annual | Heſperis |
| ——, Virginian | Heſperis |
| Stone crop | Sedum |
| —— tree | Chenopodium |
| Storax tree | Liquidamber |
| ——, Syrian | Styrax |
| Strawberry | Fragaria |
| ——, ſpinach | Blitum |

| *Engliſh,* | *Botanic Name.* |
|---|---|
| Strawberry tree | Arbutus |
| Succory | Cichorium |
| Sugar cane | Saccharum |
| Sultan flower | Centaurea |
| Sumach | Rhus |
| ——, myrtle-leaved | Coriaria |
| Sun dew | Droſera |
| —— flower | Helianthus |
| ——, dwarf | Tetragonotheca |
| ——, American | Rudbeckia |
| ——, little | Ciſtus |
| Superb lily | Glorioſa |
| Swallow wort | Aſclepias |
| Sweet briar | Roſa |
| Sweet Cicely | Scandix |
| —— gum | Liquidamber |
| —— John | Dianthus |
| —— root | Glycyrrhiza |
| —— ſop | Annona |
| —— ſultan | Centaurea |
| —— William | Dianthus |
| Sycamore tree | Acer |
| Syringa | Philadelphus |

## T.

| | |
|---|---|
| Tacamahaca | Populus |
| Tallow tree | Croton |
| Tamarind | Tamarindus |
| Tamariſk | Tamarix |
| Tanſey | Tanacetum |
| Tare | Vicia |
| Tarragon | Artemiſia |
| Tarton raire | Daphne |
| Tea | Thea |
| ——, New Jerſey | Ceanothus |
| ——, Oſwego | Monarda |
| ——, South Sea | Ilex |
| Thiſtle | Carduus |
| —— , bleſſed | Cnicus |
| ——, diſtaff | Carthamus |
| ——, golden | Scolymus |
| ——, hedge hog | Cactus |
| ——, melon | Cactus |
| ——, ſtar | Centaurea |
| ——, torch | Cactus |
| Thorn, black | Prunus |
| ——, white | Cratægus |
| ——, box | Lycium |
| ——, Chriſt's | Rhamnus |
| ——, Egyptian | Mimoſa |
| ——, evergreen | Meſpilus |
| ——, goat's | Aſtragalus |
| ——, purging | Rhamnus |
| ——, ſcorpion's | Ulex |


Thorn,

# INDEX.


| *Engliſh,* | *Botanic Name.* |
|---|---|
| Thorn, apple | Datura |
| Thorough wax | Bupleurum |
| Three leaved graſs | Trifolium |
| Thriſt | Statice |
| Throat wort | Campanula |
| ——, blue umbeliferous | Trachelium |
| Thyme | Thymus |
| Tinus | Viburnum |
| Toad flax | Antirrhinum |
| Tobacco | Nicotiana |
| Tomatoes | Solanum |
| Tooth-ach tree | Zanthoxylon |
| Torch thiſtle | Cactus |
| Touch me not | Impatiens |
| Tragacanth, gum | Aſtragalus |
| Traveller's joy | Clematis |
| Tree primroſe | Oenothera |
| Trefoil | Trifolium |
| ——, bean | Cytiſus |
| ——, bean, ſtinking | Anagyris |
| ——, bird's foot | Lotus |
| ——, marſh | Menyanthes |
| ——, moon | Medicago |
| ——, ſhrub | Ptelia |
| ——, ſnail | Medicago |
| ——, tree | Cytiſus |
| Tricolor | Amaranthus |
| Trinity herb | Viola |
| Trumpet flower | Bignonia |
| ——, honeyſuckle | Lonicera |
| Tuberoſe | Polianthes |
| Tulip | Tulipa |
| ——, African | Hæmanthus |
| ——, checquered | Fritillaria |
| ——, flower | Bignonia |
| ——, tree | Liriodendron |
| ——, tree laurel-leaved | Magnolia |
| Tupelo | Nyſſa |
| Turk's cap | Lilium |
| —— head | Cactus |
| —— turban | Ranunculus |
| Turnep | Braſſica |
| ——, French | Braſſica |
| ——, cabbage | Braſſica |
| ——, radiſh | Raphanus |
| Turpentine tree | Piſtacia |
| Tutſan | Hypericum |
| Twyblade | Ophrys |

V.

| | |
|---|---|
| Valerian | Valeriana |
| ——, Greek | Polemonium |
| Varniſh tree | Rhus |
| Venus's comb | Scandix |
| —— looking-glaſs | Campanula |
| —— navel wort | Cynogloſſum |
| Vetch | Vicia |
| ——, bitter | Orobus |
| ——, chickling | Lathyrus |
| ——, hatchet | Coronilla |
| ——, kidney | Anthyllis |
| ——, liquorice | Aſtragalus |
| ——, medic | Hedyſarum |
| Viburnum, American | Lantana |
| Vine | Vitis |
| ——, black | Tamus |
| ——, white | Bryonia |
| Violet | Viola |
| ——, dog's tooth | Erythronium |
| ——, bulbous | Galanthus |
| ——, dame's | Heſperis |
| Viper's graſs | Scorzonera |
| Virginian ſilk | Periploca |
| Virgin's bower | Clematis |
| Vitæ, arbor | Thuya |
| Umbrella | Magnolia |

W.

| | |
|---|---|
| Wake Robin | Arum |
| Wall flower | Cheiranthus |
| Walnut tree | Juglans |
| Wart wort | Euphorbia |
| Water creſs | Siſymbrium |
| Water lily | Nymphæa |
| —— melon | Cucumis |
| Wayfaring tree | Viburnum |
| Weld | Reſeda |
| Wheat | Triticum |
| ——, Turky | Zea |
| Whin | Ulex |
| ——, petty | Ononis |
| White beam tree | Cratægus |
| —— leaf tree | Cratægus |
| —— thorn | Cratægus |
| —— ſattin | Lunaria |
| Whortle berry | Vaccinium |
| Whorts | Vaccinium |
| Wicken tree | Sorbus |
| Widow wail | Encorum |
| Willow | Salix |
| ——, French | Epilobium |
| ——, ſpiked | Spiræa |
| ——, ſweet | Myrica |
| ——, herb | Lythrum |
| ——, herb | Lyſimachia |
| Wind flower | Anemone |
| Winter berry | Prinos |

# INDEX.


| *English.* | *Botanic Name.* |
|---|---|
| Winter bloom | Azalea |
| ——— cherry | Phyſalis |
| ——— green | Pyrola |
| ——— bark | Laurus |
| ——— ſavory | Satureja |
| Witch hazel | Hamamelis |
| ——— helm | Ulmus |
| Woad | Iſatis |
| Wolf's bane | Aconitum |
| ——— ———, winter | Helleborus |
| ———————, peach | Solanum |
| Woodbine | Lonicera |
| —— forrel | Oxalis |
| Woodroof | Aſperula |
| Wormwood | Artemiſia |
| Would | Reſeda |
| **Y.** | |
| Yarrow | Achillæa |
| Yew tree | Taxus |
| **Z.** | |
| Zedoary | Amomum |
| Zerumbith | Amomum. |


FINIS.